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OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n.)

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TWO NEW STUDENT CHAPTERS

Applications have been received, since the first of the year, for the organization of student chapters at two more of our veterinary colleges. The first of these was received from the Colorado Agricultural College, where 22 students in the Veterinary Division petitioned for a chapter. The Executive Board approved the application and the new chapter was added to the roll early in March. The other application was made by 35 students in the College of Veterinary Medicine, Alabama Polytechnic Institute. A majority of the members of the Executive Board have voted favorably on the petition and the other members are expected to be heard from shortly. Anticipating favorable action on the Alabama petition, we will have eleven student chapters organized, with a total membership of 797.

"Just as the twig is bent the tree's inclined," according to Pope. This line best expresses the fundamental purpose of A. V. M. A. student chapters and junior membership. The beneficial effect of these student organizations has already been manifest, in more ways than one, although the oldest chapter is only four years old. Before we had junior members and student chapters, the A. V. M. A. was something that only a few students had ever heard of and even less knew anything about. Now things are different.

MANY SPLENDID MEETINGS

This issue of the JOURNAL contains an unusually large number of reports of veterinary meetings held during the winter months. Practically all of the state and provincial associations held meetings (annual or semi-annual) during the winter, so it is natural for us to receive reports of these meetings for publication at this time. The fact that the March issue is usually almost entirely taken up with the report of the meeting of the U. S. Live Stock Sanitary Association compels us to hold some of these reports until the April issue. Late arrivals will have to be held over until May.

The JOURNAL is always glad to receive and publish these reports. In answer to questions sometimes asked by members who fail to find reports of their association meetings in the JOURNAL, we take this opportunity to say that we practically never decline to publish a report if it is received with reasonable promptness. A short time ago we received a report of a meeting nine months after it was held. Naturally, we did not deem it advisable to publish the report. If your association has held a meeting and you fail to see a report in the JOURNAL within the next month or so, before you write to the Editor to register a complaint, ascertain from your association secretary whether he has forwarded a report of the meeting to the JOURNAL.

In the reports published this month, many interesting bits of information are to be found. The New England Veterinary Medical Association was formed at a rousing meeting held in Boston. Maryland veterinarians have decided to attempt to strengthen their Veterinary Practice Act. The Minnesota State Veterinary Medical Society appropriated $250.00 toward the expenses of a foreign veterinarian to the International Veterinary Congress, in 1934, and we have it unofficially that the Ohio State Association did the same. Oklahoma veterinarians featured public-health work at their meeting, almost to the exclusion of other subjects.

The veterinarians of the Southern States got together at Birmingham, Alabama, for their annual conclave, which was highly successful. Dr. Cary reports a very enjoyable week at Auburn, early in February, the occasion being the annual short course and meeting of the State Association. This occasion is about the longest veterinary meeting held in the entire country. It starts on Monday and ends on Saturday, year in and year out. Missouri

veterinarians have decided to team up with the extension forces in that state. Read the letter sent by the State Association to the Director of Extension. Other states please copy.

TWO COMMITTEES APPOINTED

Dr. Robert S. MacKellar, chairman of the Executive Board, announces the appointment of two special committees of the Board, authorized at the meeting held in Chicago in December.

One of these committees will make a thorough investigation of members of the A. V. M. A., who are engaging in various forms of advertising, to determine, if possible, whether these activities constitute violations of the Code of Ethics. The committee consists of the following: Dr. C. P. Fitch, Chairman, Saint Paul, Minn.; Dr. D. H. Udall, Ithaca, N. Y.; and Dr. E. P. Althouse, Sunbury, Pa.

The other committee will make a study of a proposal that the A. V. M. A. make suitable awards, from time to time, in recognition of meritorious contributions to the field of veterinary science. It is believed that recognition by the A. V. M. A. of worth-while contributions would be a further stimulus to scientific research and investigations in the field of veterinary science. The committee is made up as follows: Dr. O. V. Brumley, Chairman, Columbus, Ohio; Dr. N. F. Williams, Fort Worth, Texas; and Dr. Geo. Hilton, Ottawa, Ont.

Members having suggestions for either committee should communicate directly with the chairman of the committee concerned.

PLANS FOR KANSAS CITY

Do not forget about the 68th annual meeting of the American Veterinary Medical Association. Here are the main facts. Detailed information later.

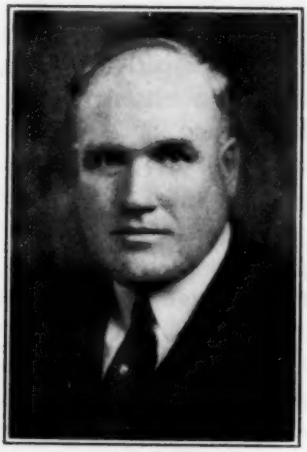
The time: August 25-26-27-28, 1931.
The place: Kansas City, Missouri.
Headquarters: The Hotel Baltimore.

Dr. A. T. Kinsley, 1103 E. 47th St., Kansas City, Mo., is chairman of the Local Committee on Arrangements.

The rabies quarantine on Lee and Whiteside counties, Illinois, was removed by the State Department of Agriculture, March 12.

TWO VETERINARIANS HONORED

It is always a pleasure to record some compliment paid to a member of the veterinary profession. During recent months we have learned of several very distinct compliments that have been paid to prominent veterinarians in different parts of the country.



DR. H. B. MITCHELL

The first of these to be mentioned here we believe to be rather unusual. At a recent meeting of the Lancaster (Pa.) Medical Club, Dr. H. B. Mitchell (U. P. '12) was elected president of the organization, which is made up largely of physicians, although several dentists and veterinarians are included among the 105 members.

Lancaster has a milk ordinance which has now been in operation for over five years, designating the local Board of Health as a Milk Inspection Bureau. Dr. Mitchell has been Milk Supervisor during this time. Previously he was a field agent of the Pennsylvania Bureau of Animal Industry.

DR. OSCAR V. BRUMLEY

We had another pleasant surprise recently upon learning that Dr. Oscar V. Brumley, dean of the College of Veterinary Medicine, Ohio State University, has been elected president of the Columbus Board of Health. Dr. Brumley has been a member of the Board for some time and has been actively interested in bringing about reforms that would insure a safe, clean milk supply for Columbus and other Ohio cities. Is there any good reason why a veterinarian should not be appointed a member of every city and state board of health in the country? We predict that this will come, sooner or later.

EXECUTIVE BOARD ELECTIONS

Elections are in progress in two of the A. V. M. A. Executive Board districts. The terms of office of Dr. George H. Hart, in District No. 6, and of Dr. N. F. Williams, in District No. 8, expire at the close of the meeting in Kansas City in August.

District No. 6 now consists of California, Nevada, Utah, Colorado, New Mexico, Arizona, Mexico, Central America and Canal Zone. District No. 8 now consists of Kansas, Missouri, Oklahoma, Arkansas, Texas and Louisiana. These two districts constituted one district until a year ago.

Polls for the nominations of the ten candidates, five to go on the ballot in each of the two districts, will close on April 28, and as soon thereafter as possible ballots will be mailed to all members, in good standing, located in the two districts. Each ballot will show the names of the five nominees receiving the highest number of votes in the primary election. The polls for the election proper will remain open for sixty days, as provided by the Constitution and By-Laws. Any members located in any of the states constituting the two districts in which elections are being held, who have not yet paid their dues for the current year, should do so immediately if they do not desire to be disfranchised.

Veterinary Students in German Colleges

According to a statement appearing in the *Berliner Tierarztliche Wochenschrift*, there are 1365 regular students enrolled in the five German veterinary colleges this year, as follows: Hannover, 463; Berlin, 345; Munich, 258; Leipzig, 153; Giessen, 146. In addition to the 1365 regularly enrolled veterinary students, 79 others are registered for special work.

APPLICATIONS FOR MEMBERSHIP

(See January, 1931, JOURNAL)

FIRST LISTING

CHAPMAN, RAYMOND GEORGE 2228-26 A St. W., Calgary, Alberta
B. V. Sc., Ontario Veterinary College, 1926
Vouchers: R. H. Cook and R. T. Skelton.

COOPER, EDWARDS MERCER 205 Edmondston Road, East Hyattsville, Md.
D. V. M., U. S. College of Veterinary Surgeons, 1927
Vouchers: H. C. Givens and E. B. Simonds

COPPINGER, DAVID WADE 930 Rice St. N. W., Atlanta, Ga.
D. V. M., University of Georgia, 1924
Vouchers: Slade H. Exley and Roy Avant.

FOLSE, CHARLES D. 70 Central Ave., Kansas City, Kans.
D. V. S., Kansas City Veterinary College, 1910
Vouchers: J. D. Ray and A. T. Kinsley.

HIXSON, RALPH WARD Falls City, Nebr.
D. V. M., Kansas State Agricultural College, 1920
Vouchers: A. T. Kinsley, Burton W. Conrad and D. W. Hurst.

JONES, ALBERT CARL High Point, N. C.
D. V. S., Kansas City Veterinary College, 1909
Vouchers: W. C. Dendinger and Wm. Moore.

LORTON, ROY DUNCAN Alvin, Texas
D. V. M., Chicago Veterinary College, 1916
Vouchers: N. F. Williams and A. J. Lewis.

MEYER, ALFRED WILLAM 150 W. 80th St., New York, N. Y.
D. V. S., New York University, 1922
Vouchers: J. Elliott Crawford and Bruce Blair.

SAN MIGUEL, JULIO Casilla 537, Santiago, Chile
M. V., University of Chile, 1919
Vouchers: Adolph Eichhorn and John R. Mohler

SWEEBE, EDWARD ELDON c/o Abbott Laboratories, North Chicago, Ill.
D. V. M., Ohio State University, 1920
Vouchers: N. S. Mayo and J. V. Lacroix.

WILLIAMS, CLARENCE VIRGIL 649 N. Robert St., Saint Paul, Minn.
D. V. M., Colorado Agricultural College, 1912
Vouchers: M. E. Schwab and G. E. Totten.

Applications Pending

SECOND LISTING

Bowen, Beck B., 545 S. 1st Ave., South Saint Paul, Minn.
Harding, Alba Earl, 411 S. Genesee St., Morrison, Ill.
Hilbert, Kenneth Franklin, Merrick Road, Amityville, L. I., N. Y.
Lawrence, Robert Parker, Walker-Gordon Lab. Co., Plainsboro, N. J.
Merchant, Ival Arthur, Iowa State College, Ames, Iowa.
Rucks, Willy, 1314 Valle, Buenos Aires, Argentina.

The amount which should accompany an application filed this month is $8.75, which covers membership fee and dues to January 1, 1932, including subscription to the JOURNAL.

COMING VETERINARY MEETINGS

New York City, Veterinary Medical Association of. Academy of Medicine, 5th Ave. and 103rd St., New York, N. Y. April 1, 1931. Dr. John E. Crawford, Secretary, 708 Beach 19th St., Far Rockaway, Long Island, N. Y.

San Diego-Imperial Veterinary Medical Association. San Diego, Calif. April 1, 1931. Dr. A. P. Immenschuh, Secretary, Santee, Calif.

Maine Veterinary Medical Association. Bangor, Me. April 8, 1931. Dr. L. E. Maddocks, Secretary, R. F. D. 2, Augusta, Me.

Southeastern Michigan Veterinary Medical Association. Detroit, Mich. April 8, 1931. Dr. H. Preston Hoskins, Secretary, 537 Book Bldg., Detroit, Mich.

Tulsa County Veterinary Association. Tulsa, Okla. April 9, 1931. Dr. J. M. Higgins, Secretary, 3305 E. 11th St., Tulsa, Okla.

Chicago Veterinary Medical Association. Atlantic Hotel, Chicago, Ill. April 14, 1931. Dr. C. L. Miller, Secretary, 508 S. Humphrey Ave., Oak Park, Ill.

Kansas City Association of Veterinarians. Baltimore Hotel, Kansas City, Mo. April 14, 1931. Dr. J. D. Ray Secretary, 1103 East 47th St., Kansas City, Mo.

Southern California Veterinary Medical Association. Chamber of Commerce Bldg., Los Angeles, Calif. April 15, 1931. Dr. W. L. Curtis, Secretary, 1264 W. 2nd St., Los Angeles, Calif.

Keystone Veterinary Medical Association. Philadelphia, Pa. April 22, 1931. Dr. C. S. Rockwell, Secretary, 5225 Spruce St., Philadelphia, Pa.

Connecticut Veterinary Medical Association. New Haven, Conn. May 6, 1931. Dr. Edwin Laitinen, Secretary, West Hartford, Conn.

Hudson Valley Veterinary Medical Society. Catskill, N. Y. May 13, 1931. Dr. J. G. Wills, Secretary, Box 751, Albany, N. Y.

THE SCOUT

Indian statue, by Cyrus Dallin, displayed at the San Francisco World's Fair, purchased for Kansas City, by popular subscription under the auspices of the Boy Scouts.

COCCIDIOIDAL GRANULOMA

Occurrence in Animals—Reference to Skin Tests*

By M. DOROTHY BECK,

California State Department of Public Health, San Francisco, Calif.,

J. TRAUM *and* EILEEN S. HARRINGTON,

Division of Veterinary Science, Agricultural Experiment Station, University of California, Berkeley, Calif.

In a small portion of the report of the Special Committee on the Prevention of Transmissible Diseases for the year 1929,[1] the attention of this Association was called to coccidioidal granuloma in animals. The short space devoted to the discussion of this disease last year, and observations made since then, justify further and more detailed presentation at this time.

Coccidioidal granuloma has been known for more than thirty years, and only recently interest in the study of the disease has been revived. This is probably due to the fact that more human cases have been recognized during the last few years.

The first human infection was observed by Posadas, in Buenos Aires, and was reported by him and Wernicke,[2] in 1892. In 1894, Rixford and Gilchrist[3] described two human cases from California, and regarded the organism in the tissues as a protozoan which was named *Coccidioides immitis* by Stiles. Ophüls and Moffitt,[4] however, demonstrated the infecting organism to be a mold of the ascomycetes group. The fungus was given the name *Oidium coccidioides* by Ophüls.[5] The former name, *Coccidioides immitis*, has priority, and is accepted as the designation of the causative agent of the disease.

Since 1892, 246 cases in humans are recorded. Ten cases of coccidioidal granuloma in animals are recorded in the literature, as follows: Giltner,[6] 1918, 1 case in cattle; Beck,[7] 1929, 6 cases in cattle and 1 in sheep; and Traum,[1] 1929, 2 cases in cattle. In this paper there are being further reported 10 cases in cattle, making a total of 20 cases in animals.

During an epidemiological investigation by the California State Department of Public Health to determine the relationship of coccidioidal granuloma in man and animals, nine of these

*This study was in part supported by a grant from the U. S. Bureau of Animal Industry.
Presented at the sixty-seventh annual meeting of the American Veterinary Medical Association, Los Angeles, Calif., August 26-29, 1930.

FIG. 1. Map of California, showing geographical distribution of animals affected with coccidioidal granuloma. (Black areas—positive findings; dotted area—negative findings.)

unpublished cases were diagnosed. The tenth case was found by the Division of Veterinary Science of the University of California in the course of routine tuberculin-testing, and will be considered in detail later in this paper.

TABLE I—*Results of survey*

COUNTY	SPECIMENS	ANIMAL	TYPE OF LESIONS	RESULT	
				+	−
San Bernardino	9	Cattle	Bronchial and mediastinal lymph-glands	4*	5
	2	Swine	Bronchial and mediastinal lymph-glands	0	2
Orange	1	Cattle	Bronchial	1	0
Riverside	1	Cattle	Bronchial and mediastinal lymph-glands	0	1
Los Angeles	6	Cattle	Bronchial and mediastinal lymph-glands	4	2
	1	Cattle	Submaxillary gland	0	1
Totals	20			9	11

*Three animals were imported from Imperial county.

Since positive findings have been limited to the bronchial and mediastinal lymph-nodes in all animal infections reported to date, only abscesses and nodules from these lymph-nodes were studied for this particular survey, with the exception of one submaxillary gland.

GEOGRAPHICAL DISTRIBUTION

To date the following counties in California have been surveyed: Kern,[7] Riverside, Orange, Los Angeles, San Bernardino and San Diego.[6] Lesions from slaughtered animals were proven to contain *Coccidioides immitis* in Kern, Orange, Los Angeles, San Bernardino, Tulare, San Diego, Imperial and Alameda counties. The last-mentioned case was in an aged cow which had been in Alameda County for the past six years.

Of the 246 human cases, there seems to be a decided concentration in California, with 218 (approximately 88 per cent) originating in this State, the majority of the cases occurring in the central and southern sections. It is hardly accurate to compare the geographical distribution of the infections in man and animals until more work has been done on the latter. In general, however, the cases in both humans and animals have been found concentrated in the San Joaquin Valley and the southern part of the State.

Lesions and Modes of Infection

In many of the human cases, the skin is no doubt the point of entry of the infection. However, the localization and the character of the lesions in many instances indicate respiratory and perhaps also alimentary infection.

In the twenty animals reported, the infected lesions were confined to the bronchial and mediastinal lymph-nodes only, pointing to the respiratory tract as the probable avenue of infection. However, it should be borne in mind that in tuberculosis[8] and in glanders[9] a large group of investigators insist that infection by the digestive tract may result in finding lesions only in the thoracic lymph-nodes, and the same may be true with coccidioidal granuloma infection. Observation thus far made gives no indication of animal-to-man, man-to-man, or man-to-animal transmission, but rather a common source of infection for both man and animal, as in actinomycosis. The most likely source seems to be soil.

The lesions in animals encountered by us consist of one to five or even more small abscesses, generally varying in size from 3 to 8 mm., well encapsulated, and containing yellowish or greenish yellow pus. In a few cases, the abscess had reached 50 mm. in diameter. These lesions resemble actinomycosis to a marked degree, and are not altogether unlike some lymph-node tuberculosis. Giltner[6] finds that histologically the nodules produced in experimentally inoculated animals are like the tubercles induced by tubercle bacilli. Only after laboratory examination can a differential diagnosis be established.

Artificial infection of cattle by Giltner,[6] and those reported in this paper, indicate that the disease has a tendency to limit itself to the point of inoculation, and probably also to the accompanying lymph-nodes. When animals were inoculated subcutaneously, the infection did not spread, even after several months. On the other hand, Giltner had no difficulty in inducing severe and rapidly fatal disease in cattle by intravenous injection of fairly large doses.

Although the lesions thus far reported have been found only in the thoracic lymph-nodes, future studies may reveal lesions elsewhere. Owing to the large percentage of skin localizations in human cases, it has been suggested that perhaps some of the so-called skin lesions in tuberculin reactors, and especially those in which no acid-fast bacteria can be demonstrated, may be

caused by *Coccidioides immitis*. It would not be at all surprising that in California we may eventually find such cases.

To date, however, none have been found, and one of the writers has studied several hundred cutaneous and subcutaneous nodules in cattle with a method of culture and guinea-pig inoculation which no doubt would have detected coccidioidal infection if it were present in these lesions. In other parts of this country and in Canada many hundred similar examinations have been made. Since *Coccidioides immitis* grows very rapidly upon all kinds of artificial media and invariably produces infection in guinea pigs, it can safely be stated that the cases of cattle skin lesions so far studied have not been coccidioidal infections.

Etiology

Coccidioides immitis presents an interesting phenomenon, because it possesses a double cycle. On artificial media it grows as a mold, while in tissues, pus and sputum, it appears as a spherical body with a highly refractile, double-contoured capsule, varying from 5 to 60 microns, and averaging 30. This latter phase reproduces by endosporulation. MacNeal and Taylor[10] claimed to have produced in anaerobic culture spherical bodies similar to those found in pus.

The cultural characteristics of this organism and the effect of its injection into experiment animals are described in the literature, and here it need be emphasized only that the white cotton-like growth on all kinds of media permits us to state only that the culture looks like *Coccidioides immitis*. If, in the lesion from which such a culture was obtained, the characteristic double-contoured bodies were not demonstrated, it is essential to inject the culture into a guinea pig to induce lesions in which the diagnostic bodies can be found, so that the identity of the mold may be definitely established. It is hoped that future studies on metabolism of this and other similar growing molds will point out specific characteristic deferentiations.

Coccidioides immitis grown on artificial media and as found in animal lesions, induces the disease in guinea pigs, rabbits, cattle, sheep, swine and dogs.

The procedure followed in establishing the diagnosis in the cases reported in this paper has been as follows:

(1) Preparation of culture. This mold grows readily upon all media ordinarily used in cultivating microörganisms.

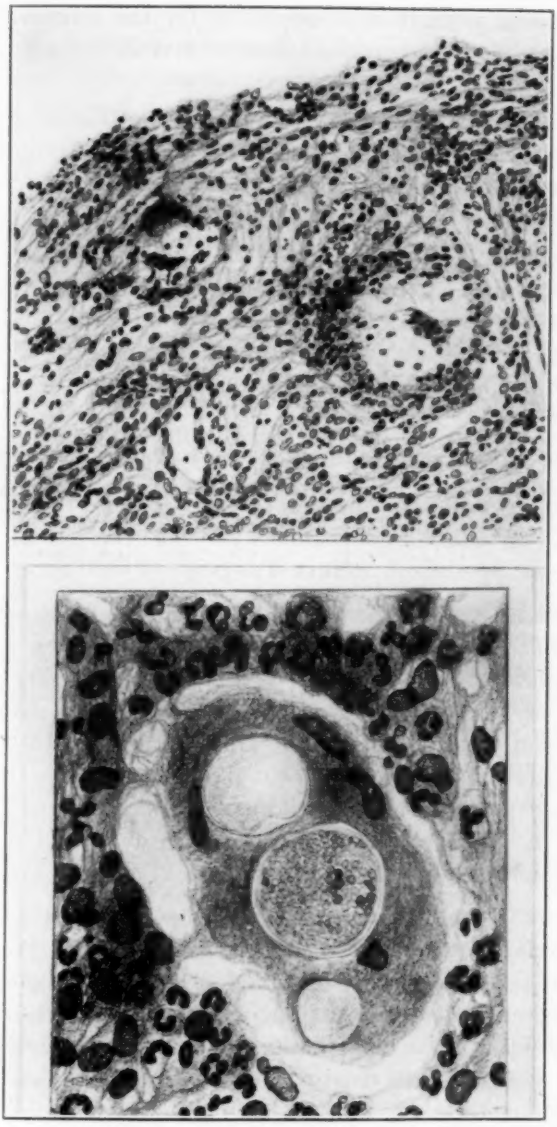


FIG. 2. (Above) Coccidioidal granuloma simulating tuberculosis. x 200.
FIG. 3. (Below) Coccidioidal granuloma. Spore with doubly refractile capsule containing many daughter or endospores, surrounded by foreign-body giant-cell. x 1000.
(Pulford, Woodland Clinic, California.)

(2) Fresh material mixed with 4 to 10 per cent KOH or NaOH was examined with 16-mm. objective for the double-contoured bodies. Such examinations should reveal actinomycosis, if present.

(3) Smears were stained by Ziehl-Nielsen, Gram, 1 per cent hemotoxylin, or Giemsa method. The double-contoured bodies in pus are more or less acid-fast.

(4) Guinea pigs were injected with fresh material if facilities were available. If cultures were obtained they were injected into guinea pigs. *Coccidioides immitis* will induce orchitis and peri-orchitis with subsequent discharge of pus, and on account of the danger to the laboratory worker, intraperitoneal injections of suspected material or cultures were made into female guinea pigs.

(5) The guinea pigs were tested with coccidioidin at the end of 6 to 8 weeks and finally these animals were autopsied, cultures were made, and lesions examined for the double-contoured bodies.

Skin Tests

Coccidioidin and tuberculin. The development of satisfactory allergic and serologic tests for this disease has been the aim of several workers. The writers have nothing to offer upon the serologic tests and therefore this subject will be dismissed by simply mentioning that Cooke[11] and Giltner[6] failed to demonstrate agglutinins or complement-fixing substances in man or animal affected with coccidioidal granuloma. Davis,[12] however, obtained a positive complement-fixation test and a negative agglutination test with the serum from old chronic human cases.

The results with the allergic tests also were variable; Jacobson,[13] Davis,[12] and Hirsch,[14] in this country, and Fonseca and Loea,[15] in South America, obtained positive allergic reactions with antigens prepared in various ways from cultures of *Coccidioides immitis.* On the other hand, Cooke,[11] working with humans, obtained negative skin reactions, and Giltner[6] obtained negative subcutaneous tests on animals with his preparations from this organism made in a manner similar to the production of tuberculin.

The coccidioidin[16] used by us was prepared by growing the mold upon plain beef broth for periods of from one to six months at incubator temperature. The cultures were then filtered, or heated and then filtered, and in one instance, after

heating and filtering, the product was concentrated to one-half its volume, and autoclaved in the final containers.

With the antigen prepared in any of the above-described methods, it was determined that coccidioidal granuloma in naturally infected man and artificially infected guinea pigs and cattle, induces local skin hypersensitiveness to a product of the growth of the mold. Normal and tuberculous guinea pigs were used for controls. Coccidioidin gave constant negative results in both the normal and tuberculous animals, whereas tuberculin induced positive reactions only in the latter.

The necessity of studying the effect of the injection of tuberculin into animals infected with coccidioidal granuloma presented itself when two cattle which gave definite intradermal tuberculin reactions were found at autopsy to be affected with coccidioidal granuloma. No evidence of tuberculosis was demonstrated. A third similar case was later found in Alameda County. This cow yielded a strong positive intradermal tuberculin reaction. When autopsied six months later, two 3-mm. nodules in the median mediastinal lymph-node and a 5-mm. nodule in the posterior mediastinal node were found. These nodules were well encapsulated and contained a slightly yellowish, glutinous pus. Cultures from the posterior mediastinal node produced a fungus growth similar to *Coccidioides immitis*. A guinea pig was inoculated with this culture and 52 days later showed an abscess at the site of inoculation, with lesions in the omentum and lymph-nodes. Double-contoured capsules were demonstrated in the pus from this animal and a fungus growth was obtained on culture. Before autopsy the guinea pig was tested with tuberculin and coccidioidin. The latter gave a positive reaction.

TABLE II—*Tests on guinea pigs*

LOT	GUINEA PIGS TESTED	REACTIONS POSITIVE	
		TUBERCULIN	COCCIDIOIDIN
1	10	8	10
2	11	5	11
3	14	0	14
4	19	7	19
5	5	0	5
TOTALS	59	20	59

Fifty-nine guinea pigs, as shown in table II, were injected with cultures or positive material from animals or humans, 4 to 12

weeks before tests with tuberculin and coccidioidin. The results indicate that some guinea pigs affected with coccidioidal granuloma will yield mostly weak but sometimes fairly good intradermal tuberculin reactions. The reactions on the whole were much weaker than the coccidioidin reactions in the same animal, and disappeared a great deal faster, often decreasing markedly between the 24th and 48th hours.

Similar tests upon cattle were thought desirable and were made as follows:

Three 6-month-old steers were inoculated in the flank with large doses of *Coccidioides immitis* culture. At the end of ten weeks these cattle were negative to the intradermal and ophthalmic tuberculin tests. Two of them, tested at the same time with coccidioidin on the opposite caudal fold, yielded positive reactions. Definite focal reactions also were found in these two upon autopsy, while the animal which received nothing but tuberculin showed neither local nor focal reactions. In all three cases only well encapsulated abscesses at the point of inoculation were found. Two cultures made from the precrural lymph-nodes were positive for *Coccidioides immitis.* Inoculations were made but no cultures were obtained from other lymph-nodes and from various organs.

Conclusions from the tests upon the three cattle must not be made. And all that may be stated safely is that cattle artificially infected with *Coccidioides immitis* were not hypersensitive to tuberculin when applied intradermally or instilled into the eye. Two of these were proven hypersensitive to coccidioidin. The third would probably also have reacted to coccidioidin, but this was not demonstrated. Whether the tuberculin reaction found in the first series of three field cases during routine tuberculin testing were obtained because of the existing coccidioidal infection or were simply three more no-lesion cases and the coccidioidal infection was a mere coincidence, was not answered by these tests on cattle. Positive tuberculin reactions on guinea pigs, injected with coccidioides, however, suggest that the presence of coccidioidal granuloma might have been responsible for the above results.

A series of non-tuberculous cattle was tested with several lots of coccidioidin and in no instance was a positive reaction obtained. Tests on tuberculous cattle were not made with coccidioidin.

From the viewpoint of those interested in tuberculin-testing in the field, they should feel that there is no injustice done when a tuberculin reactor is slaughtered and coccidioidal granuloma

and not tuberculosis is found. Such an animal when detected should have been removed from the dairy. On the other hand, when the status of a herd's accreditation is involved it is highly desirable to make certain that the lesions found in tuberculin reactors are tuberculous.

The tests do indicate that coccidioidin may aid us in determining the presence or absence of coccidioidal granuloma in man or animal.

Summary

1. Cases of coccidioidal granuloma have been found in both man and animals. Ten new cases in cattle are being reported at this time.

2. The etiology of this disease is the fungus *Coccidioides immitis*, which possesses a double cycle. On artificial media it grows as a mold, and in tissue it appears as a double-contoured capsule.

3. The lesions in animals have been confined to the bronchial and mediastinal lymph-nodes.

4. There is no evidence of animal-to-man transmission or vice versa.

5. A specific allergic skin reaction has been obtained with coccidioidin in infected animals. A similar reaction has been observed in man.

6. Some guinea pigs infected with coccidioidal granuloma give fairly good intradermal tuberculin reactions. This, however, is not constant.

Acknowledgment

Acknowledgment is made of the courtesies extended by Dr. R. V. Stone, Director of Laboratories, Los Angeles County Health Department, Los Angeles, California, in providing laboratory space for some of the field work.

Bibliography

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[2]Wernicke: Jour. de Microg., xv (1891), p. 14.
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SOME DISEASES OF CATTLE TRANSMITTED TO MAN THROUGH MILK*

By P. R. BAIRD, *Waterville, Maine*

Public health is not a science standing in isolated grandeur. Rather it is a coöperating and coördinating focus, at which meet all of those sciences which may assist in surrounding man with every safeguard which may protect and prolong his life.

The development of modern sanitary science and the increasing interest in public health has resulted in many cities passing milk ordinances and practicing milk inspection for the protection of the community.

Milk is a universal food, widely consumed and produced under conditions as varied as the environments of man. It is the excretion of a living animal and as such is highly complex in nature and liable to variation in composition. No artificial mixture of chemical substances, even in the exact proportions in which they occur in milk, will yield milk. It has constituents and properties beyond the merely chemical.

Milk as secreted is sterile but during every stage, from the producer to the consumer, contamination is possible. The very composition of milk which makes it so valuable as a food also makes it an ideal medium for the growth and development of most forms of bacteria.

The sources by which bacteria gain access to milk are: intramammary, during milking, from milk utensils, both in transit and on the premises of the consumer.

Up until a few years ago, it was thought that the interior of the udder contained no bacteria. More recent views and investigations have proved that this was not true. The bacteria introduced during milking may be from the coat, teat or udder of the cow, or from the clothing or hands of the milker. No person possessed of any bacteriological knowledge will need convincing that the cow with manure-incrusted flanks and filthy tail is a source of contamination. The milker who comes directly from various farm duties, without changing his clothing or washing his hands, or spits on his hands or wets them with milk to facilitate strip milking, is a potential source of infection which may be far more dangerous than ordinary stable contamination.

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The old-fashioned milk-strainer made of flannel or cheese-cloth is fast being replaced by the cotton pad which, when once used, is replaced by a new pad. Utensils that are ripped in the seams and rusted, and all pails, cans, bottles, separators, coolers and milking machines not thoroughly sterilized are accepted sources of danger.

In transit milk may become contaminated by dust, or by being changed from one receptacle to another which may not be sterile.

Milk on consumers' premises is subjected to various degrees of contamination, varying with the condition of the house and the method of handling by the housewife. Dr. Orr conducted experiments over a period of time, taking all kinds and conditions of homes into consideration, and found that the percentage of increase of bacteria was 23.5.

Although milk is an excellent nutrient medium for most bacteria, it is not equally so for all and it has been demonstrated that there is a struggle for existence going on between the different bacteria introduced, the survival of one type over another depending upon the initial contamination, the kind of other bacteria present, the time interval and, in particular, the temperature at which the milk is kept.

Milk Should Be Kept Cool

In view of the practical importance of keeping the milk cool, the effect on the bacterial content of storing milk at the water-freezing temperature has been studied by a number of investigators. Fresh samples of milk kept for 24 to 48 hours at 0° C. show no increase in the number of bacteria but a slight decrease. However, when these same samples were kept for many days and weeks, it was found that a great increase in the number of bacteria had taken place. For example, milk containing 3,500 bacteria per cc and kept at a temperature of 0° C., at the end of six days showed an increase of 450 bacteria per cc; but at the end of 74 days, under the same conditions, the bacteria count was 36 million. This fact is important only in that it puts a limit on the time milk may be kept, even under ideal conditions. The development of the ordinary lactic acid bacteria in practically all cases checks the growth of other species of bacteria, and finally kills them, since the bacteria regularly decrease in actual numbers after the lactic acid bacteria have become abundant. Lactic acid bacteria, however, do not develop at a low temperature, so milk

is not necessarily wholesome because it is sweet, especially if kept at a low temperature.

Thermal destruction of bacteria in milk, or pasteurization, so called, is quite universal in this and other countries today. Heating to 142° F. for 30 minutes constitutes proper pasteurization if conducted under strictly sanitary conditions. However, the infection of pasteurized milk in the course of handling is always a menace and requires more care than raw milk. According to Dr. DeLangle, of France, pasteurized milk is a sterile product which has lost many essential physiological properties. Its acid reaction, leathery composition, etc., render it, no matter how treated, unfit for use by the infant.

Still, in spite of this learned bacteriologist's opinion in regard to pasteurized milk, the supply of our large cities, produced on farms hundreds of miles from the consumer, must be pasteurized in order that the bacterial content which, under average producing and shipping conditions, is necessarily high, may be rendered less dangerous as a food.

Practically Free from Bovine Tuberculosis

Through the combined efforts of state and federal governments, bovine tuberculosis, which is often transmitted to the human family through the medium of milk, has become of less danger each year, until at the present time New England is practically free from this once common source of infection. Excluding tuberculosis, there are other diseases of the cow which exert considerable influence upon the quality of the milk and often render it dangerous to health. As pasteurization has not become universal, nor do all agree that the taste of milk is improved by this terminal process, it is probable that in small cities and rural communities raw milk will be consumed for some years to come. It may be of interest to note some of the diseases of cattle which may affect the health of man through milk.

Hemorrhagic enteritis: Transmitted through milk, causing headache and diarrhea.

Septic conditions: The milk is altered and not fit for human consumption.

Mastitis: Common and due to streptococci, staphylococci, and varieties of *Bacillus coli.* They can in no way be differentiated from the disease-producing streptococci and staphylococci of man. For a time (1900 to about 1912) it was thought that streptococci from a case of mastitis would not cause any patho-

logical condition in man, until Holst reports four outbreaks of acute gastro-enteritis and sore throat from drinking raw milk from cows suffering from streptococcic mastitis. Dr. Holst inoculated himself by drinking 200 cc of the infected milk and became quite ill, suffering from diarrhea, vomiting, pain and sore throat. Since that time (about 1912), mastitis has been recognized as a potential source of danger to the public drinking raw milk. Massachusetts has reported two quite serious epidemics of throat infections during the past two years which were traced to the milk supply.

Abortion disease: Abortion disease of cattle is a highly contagious disease, causing premature expulsion of the fetus, retained placenta, metritis, mastitis, and other pathological conditions, depending upon the nature of the secondary infection. According to Dr. John R. Mohler, chief of the United States Bureau of Animal Industry, the losses from abortion disease are in excess of 50 millions of dollars annually. There is no dispute that there is a close relationship between the undulant fever organism (*Brucella melitensis*) and Bang's bacillus, the acknowledged cause of abortion disease in cattle.

Another Important Disease

Undulant fever: Undulant fever is finding space in medical journals with increasing frequency. It's the scare of the hour. One public health official of prominence has recommended that all cattle affected with abortion disease be killed. This would be economically impossible and there is little danger of such a radical opinion being acted upon. Still it is a warning to the conservative element in both professions. Research up to the present time is too controversial to justify radical steps.

Evans, in this country, and Favilli, in Italy, hold that the two organisms (*Brucella melitensis* and *Brucella abortus*) are identical, differing only in their pathogenicity for man. Others in Germany, Italy and France believe that the organisms are biologically, morphologically and clinically different; that *Br. melitensis* is pathogenic not only for goats but also for man, and cattle and sheep may act as lesionless carriers in rare instances.

The advocates of the former conception bring a series of clinical experimental proofs to support their claim. Favilli confirms the work of Evans, in respect to the organisms differing only according to the medium in which grown or, *in vivo*, according to the particular animal infected. That is to say, one type is

pathogenic for man and the other for the bovine species. In view of the incontestable instances of the transmission of undulant fever from cattle to man, this conception would seem invincible. However, there are good authorities who believe that the Bang organism is never pathogenic for man. This group argue that when man is infected with undulant fever, the causal agent is that of Bruce and not Bang's. Nicolet injected man with large doses of Bang's bacillus (highly virulent strains), but was unable to produce a single pathological symptom, while small doses of *Br. melitensis* proved highly pathogenic.* Here the first group retort that Evans injected a pregnant cow with *Br. melitensis* and produced abortion in five months. This, they claim, proved the receptivity of one cow to experimental undulant fever infection, but does not prove the two organisms interchangeable enough to satisfy the live stock industry that human health is at stake. It is a known fact that Malta fever in man and goats and epizoötic abortion in cattle do not develop together. Where one is prevalent the other may be rare and vice versa. This fact alone is sufficient proof to some that Bang's bacillus is practically harmless to man. Laboratories are constantly reporting cases of workers who become infected with *Br. melitensis*, but cases of Bang infection are rare. Veterinarians handling virulent cases in cattle caused by Bang's bacillus and using the live cultures to combat this disease have, up to the present time, used little or no precaution to prevent self-infection, and to my knowledge no cases have been reported. Conservative medical men and most veterinarians are still of the opinion that abortion disease in cattle is too common and undulant fever too rare to have a close relationship from a public health standpoint. One public health officer of Maine suggested that possibly it was necessary for the human to receive a heavy inoculation of *Br. abortus* in order to become infected. The one case reported in Waterville, last year, was drinking milk from an infected herd, or at least was known to be getting milk from such a source, and showed, according to laboratory examination, a positive reaction to *Br. abortus* but apparently did not get a heavy infection, as the bacteria count of this milk was below 25,000 bacteria per cc. Another suggestion is that a great many people have a natural immunity to Bang's bacillus. This may be so, but is it not strange that farmers, dairymen and veterinarians have this immunity, or some protection with which other people are not endowed, in

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order to come in daily contact with this disease in its most virulent form and not have a large percentage of infections?

The standard of milk is slowly but surely being raised. This is due to a greater knowledge of sanitation on the part of the producer and a better understanding of the dangers of a low-standard product on the part of the consumer. This knowledge and understanding of the producer and the consumer is fostered and advanced by public health officers who are no longer appointed on account of their political value to their particular party but because of their qualifications for the work.

Commission Companies Suspended

Forty-two commission companies, located at National Stock Yards, Ill., were "suspended from registration," February 24, by order of C. F. Marvin, Acting Secretary of Agriculture, as a result of evidence showing violation of the Packers and Stockyards Act, which the U. S. Department of Agriculture administers.

A hearing resulted in testimony that the commission companies in question refused to sell or buy live stock or have any business relations with two other market organizations. The suspension became effective March 16 and will continue for a period of 90 days, except that the Secretary of Agriculture may modify or set aside the provisions of the order if the suspended firms cease the discriminatory practices.

The decision of the Acting Secretary, based on voluminous testimony, stated in part:

> The evidence in this case clearly discloses a general widespread attempt to deny the advantages of an open competitive market to an agent for the farmer or shipper and to an order-buying company as agent for various members of the packing industry. This is a grave injustice to their principals. . . . The record discloses nothing to excuse the conduct and actions of the respondents toward the National Order Buying Company and the Producers Livestock Commission Association, legally registered and with the legal right to operate at the stockyards. The establishment of an open competitive market is one of the prime essentials which the Packers and Stockyards Act of 1921 was designed to accomplish and perpetuate.

The proceedings, commonly known as the Saint Louis boycott case, began at East Saint Louis, November 6, 1930, before an examiner appointed by the Secretary of Agriculture and the initial hearing lasted 20 days. The evidence obtained was argued by counsel for all parties before the Acting Secretary of Agriculture on December 19.

Heavy losses among live stock, attributed to botulism, were reported from the vicinity of Florence, Alabama, during March.

A FILTRABLE VIRUS-LIKE AGENT IN AVIAN LARYNGOTRACHEITIS

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A filtrable virus in avian laryngotracheitis is not a new etiologic conception of this disease. Dr. F. R. Beaudette, of New Jersey, reported its presence at Montreal, Canada, last summer, while the authors heard an informal report of Dr. J. R. Beach's work on the association of a filtrable virus with laryngotracheitis at the meeting of the American Research Workers in Animal Diseases, Chicago, Illinois, December, 1930. Therefore, no claim of priority is presented in the following experiments.

In previous publications[1-5] pathogenic diphtheroid-like microorganisms of three antigenic types in the upper respiratory tract of naturally infected fowls were described. During the course of these bacteriological studies, an opportunity was provided also to determine the infective character of bacteriologically sterile filtrates prepared from the exudates of the upper respiratory tract as well as the internal organs of naturally infected fowls. The filtrates were prepared by emulsifying the tissue or tissue exudates in sterile physiological salt solution and triturating in a sterile mortar. Sterile gauze, cotton or filter paper was employed to remove particles of tissue before passing the solutions through Mandler filters. Each filtrate was tested for sterility by seeding in dextrose broth in Smith tubes as well as on 10 per cent horse-blood-agar plates. The filtrates prepared in the above manner were held at ice-box temperature until they were inoculated into clinically healthy fowls. Filtrates held more than thirty days were retested for sterility before being used.

The healthy chicks and fowls were exposed to the filtrates by laryngeal and postglossal instillation as well as intravenous and subcutaneous injections. When several fowls (fifteen to twenty-five) received a single filtrate, they were held in feeding batteries on isolated ground, remote from the Animal Pathology Laboratory, that had not been used for poultry for a period of many years. Small groups of healthy fowls and chicks (two to sixteen) were confined in small wire cages placed in special galvanized

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pans. The pans containing the wire cages were placed in isolated places on premises not occupied by poultry, or kept in a separate isolation ward at the laboratory. Each cage in the isolation ward was covered with moist burlap. In addition to this precautionary measure, the relative humidity of the room was maintained at 75 to 80° F. wet bulb reading (Tycos hygrometer) by means of continuous water sprays. Control or uninoculated chickens kept in the isolation ward in separate cages with burlap cover did not contract the disease. The inoculated and control chicks were cared for by special attendants wearing rubber gloves, aprons and boots, which were repeatedly disinfected by immersion in bichlorid of mercury 1-1000.

Inoculation Experiments

The inoculation experiments to be described in this paper represent selected tests with bacteriologically sterile filtrates over a period of three years. Many of the inoculation tests conducted during this period resulted negatively, and are purposely omitted in this discussion. In the negative group a majority of the filtrates were prepared from the laryngeal exudate of individual fowls, with the assumption that a single infected fowl was representative of the disease in the flock. To obtain more representative materials, laryngeal exudates and tissue filtrates from a group of naturally infected fowls were employed in preference to comparable tissue and tissue exudate filtrates from single infected fowls in flocks.

Composite liver and spleen filtrate 695-A: The livers and spleens of naturally infected chicks about one week of age were mixed in the preparation of a composite spleen and liver filtrate. The bacteriologically sterile filtrate was administered to ten healthy chicks three weeks of age. Four received 0.1 to 0.2 cc intralaryngeally. Two received 0.5 cc postglossally. Four received amounts varying from 0.5 to 1.0 cc intravenously. Two of the chicks exposed intralaryngeally failed to show symptoms or discernable lesions, while the remainder displayed varying degrees of laryngeal congestion, edema, and accumulations of fibrin. The lesions appeared on the third day and were transitory in different chicks for ten or more days. Thus, a subacute laryngotracheitis developed in eight of ten healthy chicks following exposure to composite liver and spleen filtrate 695.

Two control chicks of the same age, after receiving direct laryngeal swabs of the unfiltered inoculum, showed pronounced

symptoms of laryngotracheitis and two of the four exposed in this manner succumbed on the fourth and sixth days, respectively.

On the basis of clinical symptoms and local laryngeal lesions, the infectivity of the liver and spleen tissue was greatly reduced by filtration. The lesions in the larynx following exposure to the unfiltered tissue exudates were characteristic of the naturally occurring acute malady (figure 1).

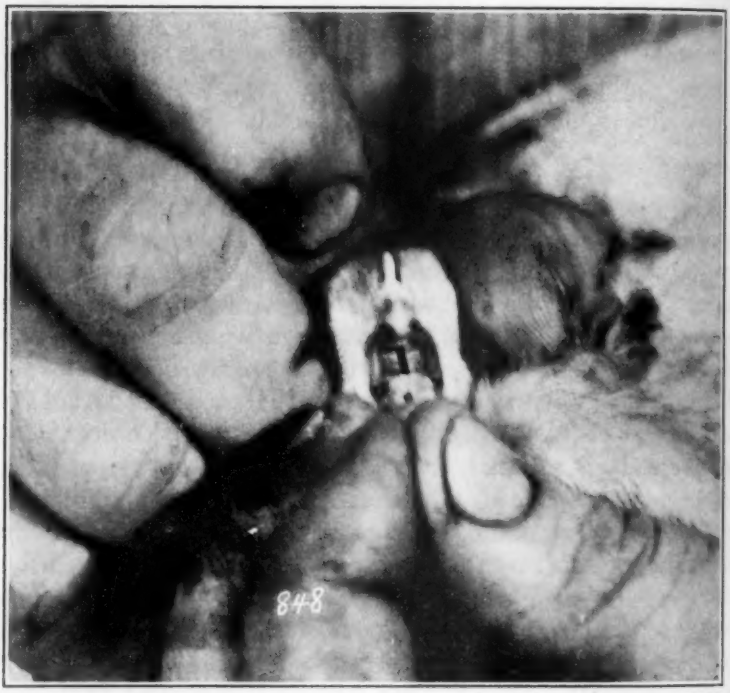


FIG. 1. Yellowish white plug of fibrin in the larynx following a direct laryngeal swab with unfiltered composite liver and spleen of 695. Similar inflammatory lesions, though not so pronounced, were observed in chicks receiving the bacteriologically sterile filtrate of liver and spleen.

Composite liver and spleen filtrate 695-B: The liver and spleen filtrate employed in the previous experiment was given also to eight healthy chickens, twelve weeks of age, weighing on an average of 700 grams. Four received 0.1 to 0.5 cc intralaryngeally. The remaining four chickens received amounts varying from 2 to 4 cc intravenously. With the exception of one chick which received 0.1 cc via the larynx, all developed mild subacute laryngotracheitis. The local inflammatory lesions appeared in the filtrate-exposed fowls on the fourth day, while two control

chickens of the same age, that received the unfiltered inoculum, developed laryngeal inflammation, consisting of congestion, edema, accumulations of mucous exudate, and patches of yellowish white, adherent fibrin in the lumen of the larynx. The initial lesions were detected on the third day in the control chickens.

Non-fatal, subacute laryngotracheitis followed exposure to liver and spleen filtrate 695. The lesions were not so pronounced as those observed in control chickens given the unfiltered liver and spleen exudate intralaryngeally.

Unfiltered laryngeal exudate 1101: In order to obtain evidence on the communicable character of acute laryngotracheitis in

FIG. 2. Chicks 1101. A group of baby chicks showing natural acute laryngotracheitis. Composite laryngeal swabs of these chicks communicated the disease to pullets, while lung and liver filtrates proved infective following laryngeal instillation in chickens twelve weeks of age.

young chicks (figure 2) to mature fowls, twenty composite laryngeal swabs from naturally infected young chicks were emulsified in physiological salt solution. Two healthy chicks three weeks of age and two healthy pullets were exposed to the unfiltered exudate by direct laryngeal swab. The pullets as well as the three-week-old chicks promptly developed inflammation of the larynx accompanied by symptoms of difficult respiration and mouth-breathing. Neither the young chicks nor the pullets succumbed, but hyperemia and edema of the larynx were prominently displayed on the third day following exposure. The clinical symptoms in the chicks and mature fowls suggested the communicable character of one type of laryngotracheitis among young chicks as well as mature fowls (figure 3) through the un-

filtered laryngeal exudates. The subacute type of the disease was observed in the pullets.

Lung and liver filtrate 1263: Separate lung and liver filtrates were prepared from the artificially induced laryngotracheitis in pullet 1263 (figure 3). This pullet had received a direct laryngeal swab of the unfiltered composite laryngeal exudates from naturally infected young chicks 1101. To determine the

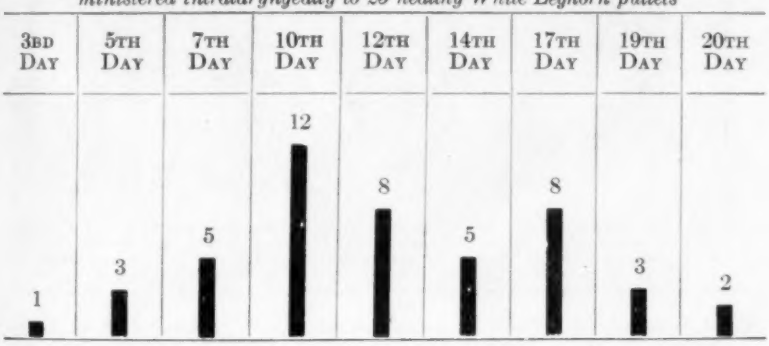
FIG. 3. Fowl 1263 showing symptoms of subacute layrngotracheitis. The disease promptly developed in this fowl following intralaryngeal exposure to composite laryngeal swabs of naturally infected young chicks (figure 2).

infective character of the lung and liver filtrates of 1263, two healthy chickens twelve weeks of age were given 0.2 cc and 0.4 cc of the lung filtrate by intralaryngeal instillation, while two other healthy chickens of the same age received 0.2 cc and 0.4 cc of the liver filtrate 1263 intralaryngeally. All four chicks promptly developed local, subacute lesions in the larynx, characterized by petechial hemorrhages and edema, with excessive amounts of mucus. Audible mucous rales were detected in all

four exposed fowls. The incubation period varied from forty-eight to seventy-two hours. The symptoms were transitory in character but symptomatically approached the acute type of the disease. All chickens made an apparent recovery.

Lung and trachea filtrate 1263: Sterile lung and trachea filtrate 1263 was instilled into the larynx of twenty-five healthy White Leghorn pullets and cockerels. On the third day, one showed distinct inflammatory lesions in the larynx; on the fifth day, three; on the seventh day, five; on the tenth day, twelve; on the twelfth day, eight; on the fourteenth day, five; on the seventeenth day, eight; on the nineteenth day, three; and on the twentieth day, two. The development of gross laryngeal lesions in this group is graphically illustrated in table I. None of the pullets or cockerels in this group died, but many of them showed subacute symptoms such as shaking the head, and on careful observation mucous rales could be detected occasionally.

TABLE I—*Sterile lung and trachea filtrate (1263) from specimen 1731-55 administered intralaryngeally to 25 healthy White Leghorn pullets*



Unfiltered laryngeal exudate 1558-9: Composite laryngeal exudates 1558-9 from two pullets that developed subacute laryngotracheitis following exposure to lung filtrate 1263 were instilled into the larynx of seven healthy chicks twelve days old. At the time the laryngeal exudates were obtained, the two filtrate-infected fowls (1558-9) displayed subacute laryngeal lesions. All seven of the exposed chicks developed symptoms of subacute laryngotracheitis. The lesions were apparent in one chick on the third day, three chicks on the fourth day, five on the fifth day, and seven on the sixth day. The local inflammatory changes consisted of well-marked congestion and edema of the larynx, together with a yellowish white laryngeal exudate which

remained for several weeks. The chicks showed unthriftiness, though to the casual observer symptoms of subacute laryngotracheitis were not noticeable. The course of the disease in this group of chicks emphasizes the occurrence of a chronic subacute type of the malady. Stated in another way, the chicks though unthrifty in appearance did not show noticeable respiratory symptoms, yet the larynx was markedly inflamed and covered with yellowish white, necrotic exudate (figure 4). Chicks suffering from this type of the disease fail to make normal gains in weight.

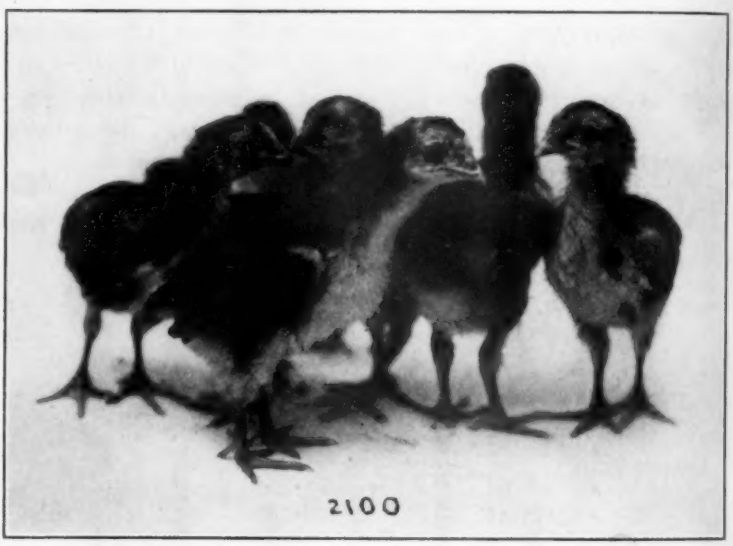


FIG. 4. A group of seven chicks showing marked inflammatory lesions of the larynx following direct laryngeal swabs. The swabs were taken from two fowls suffering from an artificially induced, filtrate laryngotracheitis.

Composite liver and lung filtrate 1101: Lung filtrate prepared from naturally infected chicks (figure 2) was administered intralaryngeally to four healthy chicks varying from three to twelve weeks of age in amounts of 0.1 to 0.4 cc, while four other chicks of the same age received comparable amounts of the filtered liver tissue. In the four chicks given the lung filtrate, local lesions consisting of congestion, edema, and exudates in the larynx appeared on the third day in two, on the fifth day in one, and on the sixth day in the other. One of the chicks in this group died on the eighth day. In the remainder of the group, the lesions were transitory in character and continued for a period of ten or

more days from the time of their initial appearance. In the group of chicks receiving the liver filtrate, the lesions corresponded to those observed in the lung-filtrate-exposed chicks. However, no fatalities occurred in chicks receiving the liver filtrate.

Liver and lung filtrate 1101 prepared from naturally infected chicks (figure 2) proved infective when placed in the larynx of healthy chicks. The local lesions were visible three days following exposure to the filtrate. With the exception of one lung-filtrate-exposed chick, the disease was subacute and non-fatal in character.

Composite laryngeal filtrate 18831: Laryngeal filtrate 18831 was prepared by swabbing the larynx of approximately twenty naturally subacutely infected chicks. In this flock there had been a heavy mortality, but chicks from which filtrate 18831 was prepared showed only subacute lesions. It is possible that some

FIG. 5. Larynx, trachea, heart and lungs of chick that died of acute laryngotracheitis, 50 hours after receiving 0.2 cc of unfiltered laryngeal exudate 18831. The filtered laryngeal exudate failed to induce an acute case of the disease in eight chicks, yet subacute lesions were observed following the administration of the sterile laryngeal exudate.

of the chicks of this group had previously suffered from an acute type of the disease. The filtrate was prepared by swabbing the throats of the chicks and immersing the swabs in sterile physiological salt solution.

The sterile filtrate was administered to eight healthy chicks five weeks of age. Two received 0.2 cc intralaryngeally, two received 0.3 cc postglossally, two received 1 cc subcutaneously, and two received 1 cc intravenously. Mild cases of subacute laryngotracheitis were observed in the chicks treated intralaryngeally and postglossally as well as one treated subcutaneously and one treated intravenously. The lesions were not so pronounced as observed in two control chicks that received the unfiltered composite laryngeal exudate. In fact, the unfiltered composite exudate 18831 produced acute laryngotracheitis in two chicks

following intralaryngeal instillation. The gross laryngeal lesions as well as the symptoms observed in the two chicks were pronounced, one case terminating fatally. The gross autopsy lesions consisted of bloody extravasations in the larynx and in the pleura (figure 5).

The chicks exposed to laryngeal filtrate 18831 developed in some cases transitory subacute laryngotracheitis. Other chicks exposed in the same manner failed to display lesions or symptoms. The infective character of the unfiltered exudate as compared with the filtered inoculum was suggested in the acute type of the malady which followed in two chicks receiving intralaryngeal instillation of unfiltered laryngeal exudate.

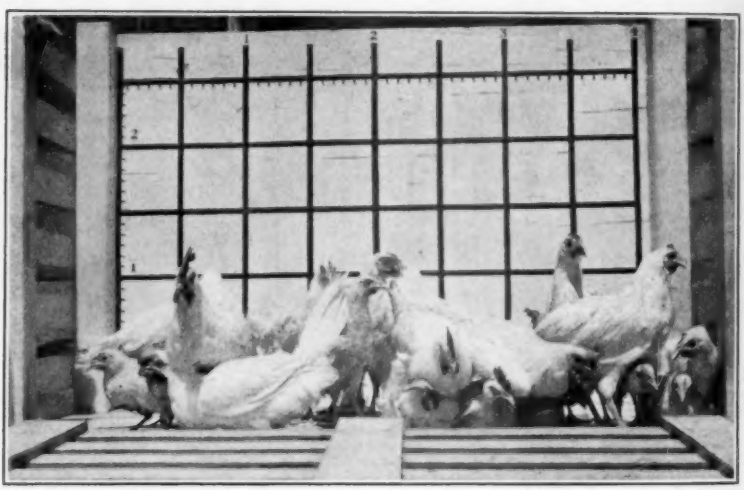


FIG. 6. A group of Leghorn cockerels and pullets suffering from subacute laryngotracheitis that furnished composite laryngeal filtrates for exposing healthy fowls. The composite filtered laryngeal exudates proved infectious to healthy fowls following intravenous injection and laryngeal instillation.

Composite laryngeal filtrate 2170: This filtrate was prepared from a group of twenty White Leghorn pullets that were suffering from subacute laryngotracheitis. Some of the pullets in this group showed intermittent respiratory symptoms such as mouth-breathing. A majority of them displayed this symptom following handling (figure 6). The sterile laryngeal filtrate 2170 was prepared by immersing sterile cotton swabs from the larynx of infected fowls in sterile physiological salt solution preparatory to filtration. The filtrate was administered to two half-grown pullets in amounts of 0.2 cc intralaryngeally, and in two pullets

of the same size in doses of 0.5 cc intravenously. All showed lesions of subacute laryngotracheitis on the fourth day, which continued for a period of more than ten days, though no fatalities occurred. Filtrate 2170 was tested thirty days later by postglossal instillation in two healthy pullets. On the third day, mild inflammatory lesions appeared in the larynx of both fowls. The congestion, edema, and excessive amounts of mucus were transitory in character and not accompanied by noticeable clinical symptoms. Similar results were experienced on a sixty-day retest.

Kidney filtrate 1342: A filtrate of this kidney of a naturally subacutely infected fowl was given to a group of five healthy chicks twelve days old. One-tenth cc of the sterile kidney filtrate was administered intralaryngeally to each chick. On the third day, three of the chicks manifested lesions of subacute laryngotracheitis, consisting of congestion, edema, excessive amounts of tenacious mucus and postglossal fibrin. The inflammatory changes in the larynx continued for a period of ten days or more, yet none of the exposed chicks died during the period of observation.

Composite lung, larynx, liver, spleen, kidney, and serum filtrate 2717: The composite lung, larynx, liver, spleen, kidney, and blood plasma or serum filtrates of a group of six clinically infected chickens suffering from subacute laryngotracheitis were administered to healthy fowls weighing 900 to 1300 grams by intralaryngeal instillation. Two fowls were given the composite filtrate of each of the above tissues. The two receiving the sterile composite plasma filtrate failed to show local inflammatory lesions in the larynx, while one of the fowls receiving the sterile composite laryngeal filtrate likewise failed to display local laryngeal changes. The remaining fowls of the group, two of which received kidney, spleen, liver, and larynx filtrate respectively, displayed transitory symptoms of subacute laryngotracheitis. The initial lesions observed in a majority of the fowls of this group appeared on the third day, but were more pronounced between the fourth and seventh days. None of the fowls receiving the different composite tissue filtrates developed the acute disease and none died during the course of the experiment.

Laryngeal filtrate 8350-51: A sterile filtrate of the laryngeal mucus of two natural acute cases of laryngotracheitis in mature fowls (figure 7) was instilled into the larynx of two healthy

mature fowls. Two-tenths cc was given to each fowl. No evidence of subacute laryngotracheitis was observed. The unfiltered laryngeal exudate, when placed in the postglossal region of two control healthy fowls, developed an acute and fatal laryngotracheitis characterized by difficult respiration.

Summary

1. Bacteriologically sterile filtrates prepared from composite laryngeal exudates and body tissues of naturally infected fowls in two separate outbreaks of laryngotracheitis inconsistently produced subacute inflammatory changes in the larynx of healthy fowls. The infective nature of the filtrate-induced disease was demonstrated by repeated transfer to healthy fowls.

FIG. 7. Fowl 8350, showing acute respiratory symptoms of natural laryngotracheitis. This fowl originated in a flock where 50 out of 150 died from the acute disease, and an undetermined number suffered from the subacute infection.

2. The acute type of laryngotracheitis was not induced experi-

mentally by sterile filtrates in intralaryngeal instillation, but symptoms approaching the acute malady were occasionally observed. The infective character of the unfiltered inoculum was demonstrated in susceptible fowls. The Mandler filtrates were less infective than the unfiltered inoculum, as judged by symptoms and gross lesions.

3. The bacteriologically sterile filtrable virus-like agent in the laryngeal exudate of subacutely infected fowls remained viable at ice-box temperature for periods of thirty and sixty days.

4. The communicable character of the subacute disease in young chicks to mature fowls was demonstrated by direct laryngeal swabs.

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Tuberculin Test Reliable

Meat-inspection records show a marked decline in tuberculosis of cattle and hogs slaughtered in federally inspected plants since systematic eradication work was begun, according to Miscellaneous Publication 59-M, "The Reliability of the Tuberculin Test," just issued in revised form by the U. S. Department of Agriculture. The history and nature of tuberculin and definite proof that it has no detrimental effect on animals tested are some of the many points discussed in the publication.

It describes in detail experiments which furnish evidence that the milk of cows is not affected in any way by the application of the tuberculin test. Other experimental work showed that the proper application of the test bears no relation to the occurrence of infectious abortion or other disease in animals. The bulletin also points out that tuberculin, which is a clear sterile product, can have no harmful effect on healthy animals.

The great majority of animals that react to the test, the publication explains, show plainly visible lesions of tuberculosis on postmortem examination. In a smaller number of cases the early stages of development of the disease are disclosed, while in only about two animals in each 1,000 tested are visible signs of tuberculosis lacking. Copies of Miscellaneous Publication 59-M may be obtained on application to the U. S. Department of Agriculture, Washington, D. C.

COMPARISON OF THE EFFICIENCY OF THE SIMPLIFIED METHOD OF BUNYEA, HALL AND DORSET AND THE STANDARD TUBE TEST FOR THE IDENTIFICATION OF CARRIERS OF PULLORUM DISEASE*

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At the 1926 meeting of the American Veterinary Medical Association, held at Lexington, Kentucky, Huddleson and Carlson[1] reported the discovery of a rapid method for the diagnosis of abortion disease in cattle by the use of a specially prepared antigen, by means of which a diagnosis could be made in a maximum of five minutes.

This led to experimentation by poultry pathologists in order to determine if this rapid test could not be modified in some way making it applicable for the detection or identification of carriers of pullorum disease infection in fowls. Within but a few months, such a modification was reported by Runnells, Coon, Farley and Thorp.[2] Their antigen consisted of one strain of *Salmonella pullorum* suspended in a 12 per cent solution of NaCl, preserved with 0.5 per cent phenol and adjusted to a turbidity 50 times greater than tube 0.75 of McFarland's nephelometer.

By this method the sample of blood was secured in the usual manner, the serum separated from the blood cells by centrifugation, and the antigen and serum mixed on a glass plate in the proportion of .02 cc of antigen to .02 cc and .01 cc of the serum respectively, giving dilutions the equivalent of 1:50 and 1:100 by the tube method.

The authors did not find that the results obtained with this rapid method corresponded entirely with those obtained with the tube method, but that in their laboratory the two tests agreed more closely than the results obtained by different laboratories in testing identical blood samples by the tube method.

The advantages claimed for the test were: (1) That a diagnosis can be made very quickly, (2) that there was less glassware to wash and sterilize, and (3) that it was more applicable than the tube method for field use.

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Feeling that this rapid test did not quite meet the need for a rapid test that would be still more simple and more reliable as a field test, Bunyea, Hall and Dorset[3] have worked out a test which they think is more nearly the one needed. In this test one drop of the blood of the fowl to be tested is spread as a thin film on a glass plate and one drop of a specially prepared antigen distributed over the blood film with a glass stirring-rod or by tilting the plate.

Relative to a positive reaction when tested by this method, the authors say:

> The blood reaction of an infected fowl consists of a clumping or flocculation of the bacteria suspended in the antigen. This flocculation takes place in from 5 to 30 seconds, except for an occasional sample which may require one or more minutes to induce an agglutination. In negative cases the uniform turbidity of the blood-antigen mixture remains unchanged.

After trying out different antigens varying in density and in salt concentration, they found that one in which the organisms were suspended in normal saline and with a density of 50 times that of standard 1.0 of McFarland's nephelometer gave the most satisfactory results.

The advantages claimed for this method by the authors are that the test can be made on the premises, that the results are obtained so quickly that the birds do not have to be leg-banded but can be disposed of at once in case the fowl is a reactor or can be returned to the flock if she proves not to be a carrier of pullorum infection, and that but one drop of blood is required for the test.

To the writer, the test of Bunyea, Hall and Dorset appeared to be so simple that if it proved to be accurate it should, in but a short time, entirely supersede the tube test. For that reason it appeared desirable to determine how its efficiency compared with that of the tube method.

Very soon following the announcement of the rapid method for the detection of carriers of pullorum disease, a flock of White Leghorn hens was tested by the tube method and 54.4 per cent reacted. This appeared to the writer to be a good opportunity to compare the efficiency of the rapid method with that of the tube test. The farm was visited and 36 of the birds tested by this method, following as closely as possible the technic advised by the authors. The antigen used was a commercial antigen prepared according to the directions of Bunyea, Hall and Dorset. The results obtained were far from satisfactory, as in but 18 of

the birds did the results of the two tests correspond, failing to agree in 18 (50 per cent) of the cases. The tube test was positive and the rapid test negative in twelve birds and vice versa in six. Following this, it was decided to spend considerable time and effort to determine the relative efficiency of the two tests.

The blood samples which were sent to the bacteriology laboratory for routine testing were tested by the rapid method. Time would not permit the testing of all of the samples which were sent in, but as far as possible identical samples were subjected to both the tube and the rapid tests. This means that in the great majority of the cases, the blood serum instead of the whole blood was used. Three entire flocks (263 birds) were tested on the premises at the time blood samples were obtained, and in two of these the serum alone was also used. See flocks 8 and 16 in table I. That the presence of the blood cells vitiates the test to some degree is indicated by comparing the tests of flocks 8 (a and b) and 16 (a and b). In these flocks no reactors were identified when the blood samples were tested on the premises, using the whole blood, while in the laboratory the rapid test, when used on the sera alone from samples secured at the time the field test was made, identified five reactors in flock 8 and four in flock 16. In the light of my present knowledge, insufficient time was allowed when making the tests in the field to allow for agglutination to occur in many of the samples.

Table I gives in tabulated form the results obtained when identical birds were tested by the tube method and the rapid method of Bunyea, Hall and Dorset.

A total of 2,159 blood samples from twenty-six flocks were tested by the rapid method and the results compared with those obtained by the tube method on the same birds. In the 2,159 samples tested by the rapid method the results were identical to those obtained with the tube method in 1,969 birds, giving a general efficiency of the simplified method in these samples of 91.15 per cent.

As the work progressed it was found that sufficient time was not being allowed for the flocculation of the bacteria in the antigen to occur. At first the tests were read in a maximum of one minute and if agglutination had not occurred the test was recorded as negative. Later the tests were allowed to stand for a maximum of three minutes and finally it was found that if the results were recorded at the end of five minutes there was still closer correlation with the tube test. When it is necessary to

TABLE I—*Comparative tests of tube and rapid methods*

FLOCK	DATE	BIRDS TESTED TUBE METHOD	REACTORS		BIRDS TESTED RAPID METHOD	REACTORS		TESTS AGREED		FAILED TO AGREE		TUBE TEST + RAPID TEST —	TUBE TEST — RAPID TEST +
			No.	%		No.	%	No.	%	No.	%		
1	11-11-29	112	61	54.4	36	21	58.3	18	50	18	50	12	6
2	12-14-29	¦ 18	11	61	18	11	61	18	100				
3	12-14-29	96	49	51	45	23	51.1	44	97.7	1			1
4	12-17-29	216	75	34.67	119	32	28.8	93	78.1	26	21.8	18	8
5	12-21-29	188	19	10.1	43	10	23.2	33	76.7	10		3	7
6	12-31-29	216	8	.37	209	27	12.4	187	84.4	22		2	20
7	1- 1-30	63	3	4.75	23	3	13	20	86.9	3		0	3
8a	1- 2-30	180	9	5.0	180*	0		171	95	9		9	
8b	1- 2-30	180	9	5.0	180	5	2.7	167	95	13		9	4
9	1- 6-30	56	2	3.5	56	0	0	54	96.5	2		2	
10	1-10-30	95	19	20.0	95			89	93.6	6		6	
11	1-10-30	112	9	8	112	6	5.3	103	91.9	9		6	3
12	1-20-30	142	19	13.3	138	10	7.2	127	92	11		11	
13	1-27-30	254	35	137	54	15	27.7	47	85.4	7		2	5
14	1-31-30	201	26	12.9	80	0		69	86.2	11		11	0
15	2- 5-30	77	28	36.3	77	31	40.2	66	85.9	11		9	2
16a	2-10-30	127	10	7.8	127*	0		117	90.5	10		10	
16b	2-10-30	127	10	7.8	127	4	3.14	120	94.4	7		6	1
17	2-12-30	46	13	28.2	46	10	21.7	43	93.4	3		3	
18	2-21-30	21	1	4.76	21	3	14.1	19	90.5	2			2
19	2-22-30	42	13	30.9	42	11	26.1	40	95.2	2		2	
20	2-28-30	108	24	22.2	108	19	17.5	103	95.3	5		5	
21	3- 1-30	55	10	18.1	55	10	18.1	55	100	0		0	0
22	3- 3-30	40	25	62.5	40	25	62.5	40	100	0		0	0†
23	3- 8-30	33	1	3.03	33	1	3.03	33	100	0		0	‡‡‡‡
24	3-17-30	17	0	0	17	0	0	17	100	0		0	‡‡‡‡
25	3-25-30	67	14	20.8	63	13	20.6	61	96.8	2		1	1
26	5- 1-30	15	0	0	15	0	0	15	100	0		0	0
Totals					2,159			1,969		190		127	63

*Tested on premises as blood samples were obtained. †Read 5 minutes. ‡Five antigens.

wait three to five minutes before the results of the test on a given bird are known, it will be necessary to leg-band the birds, as too much time would be consumed in making the test. This is of no consequence except possibly in farm flocks where the rearing of poultry is not the principal line of endeavor.

Of the 190 samples in which the two tests did not agree, 127 samples were positive by the tube method and negative by the rapid method, meaning that if the rapid method had been used in testing these flocks, 127 positive birds would have been left in them. Sixty-three samples were negative by the tube method that were found to be positive by the rapid method. Thirty-five of these birds were in three of the flocks tested. In each of these flocks a relatively large number of the blood samples gave a cloudy reaction and it is probable that these birds were carriers of pullorum infection but the positive reaction in the tube test was masked by the precipitate.

In six flocks, with a total of 178 birds tested by the rapid method, this test entirely agreed with the results obtained with the tube method. In six other flocks, from which 494 birds were tested by the rapid method, this test agreed with the tube test in from 95 to 97.7 per cent of the cases, and in seven others, in which 719 birds were tested by the rapid method, its efficiency as measured by the tube test was above 90 per cent.

An attempt was made to determine if the commercial antigen might not be modified to make it more efficient for the detection of carriers of pullorum disease. For this purpose a quantity of the bacterial suspension of the correct density was secured to which no preservative had been added. Small portions of this suspension were taken and modified as follows:

1. By the addition of 0.5% of phenol.
2. By the addition of 12% of NaCl.
3. By the addition of 1% of chloroform.
4. By the addition of 0.5% of formalin.
5. By the addition of .25% of trikresol.

The blood sera of a group of fowls that had reacted to the tube test but had failed to react by the rapid method were tested by each of these modified antigens and the time that elapsed before an agglutination occurred was noted in each case.

The results are shown in table II. An analysis of this table does not bring out that the other modified antigens were any more efficient than the commercial antigen.

TABLE II—*Number of minutes required to produce agglutination with various modified antigens*

BIRD	MINUTES REQUIRED TO PRODUCE AGGLUTINATION				
	.5% PHENOL	12% NaCl	.1% CHLOR.	.5% FORMALIN	.25% TRIKRESOL
R. I. R. 66	7	15	15	7½	13
R. I. R. 22	7	8	6	4	5
R. 50 R.	6	8	9	None used	9
U. A. 657	3	3	3	3	3
U. A. 696	8	6	7	7	8
U. A. 795	7	9	8	6	7
87	6	*	6	7	7
U. A. 503	6	8	7	5	6
U. A. 695	3	3	3	3	3
U. A. 693	2	2	2	2	2½
766	3½	7	3	7	7
65R	2	2	2½	3½	6
R. I. R. 96	†	†	†	†	
A. 218	1½	1½	1½	1½	1½
R. I. R. 54	1	1	1	Not tested	
U. A. 656	†	†	†	†	

*No agglutination at 10 minutes.
†No agglutination at 9 minutes.

An analysis of table II does bring out very clearly the fact which has already been discussed that in many cases from three to five and even more minutes are required for agglutination to occur. From the bird U. of A. 657 *S. pullorum* was isolated and it required three minutes on each of the modified antigens for flocculation to occur. U. of A. 695, another bird from which *S. pullorum* was isolated, required three minutes to agglutinate each of the five antigens. *S. pullorum* was isolated from the ovules of bird U. of A. 696, yet her serum did not cause flocculation for from six to eight minutes. Birds U. of A. 693 and A 218 both yielded *S. pullorum* upon autopsy and they required 2 and 1½ minutes, respectively, to cause agglutination.

A comparison of the efficiency of modified antigens was made also in testing three different flocks by the rapid method. The same antigens mentioned above were used except that one containing 0.5 per cent of phenol and 0.04 per cent of NaOH was substituted for that containing 12 per cent of NaCl. Each of these antigens was used on a total of 71 birds in the three flocks, and no one of the others proved to be any more efficient than the commercial antigen. In flock 23, consisting of 33 birds, the blood sera were tested first by the tube method, then by the rapid method, using the commercial antigen, and then by the five antigens listed above and all indicated but one reactor (bird 494),

the six rapid tests checking exactly with the tube test. In flock 18, each of the five antigens indicated a carrier which had also reacted by the tube method and in addition each identified two birds as carriers that were negative by the tube test.

The rapid method of testing fowls for the identification of carriers of pullorum infection was found to have one very decided advantage over the tube method of making the agglutination test, that is, it is in no way vitiated by a "cloudy" serum. In a relatively large number of tests, when the presence of a cloudy precipitate made it impossible to make a positive diagnosis when tested by the tube method, the rapid method gave a clean-cut positive reaction.

A number of birds that gave a positive reaction by the tube method but failed to react by the rapid method were purchased and autopsied in order to determine, if possible, whether they actually were carriers of pullorum disease infection or not.

These birds were autopsied aseptically, the liver and heart cultured, and brilliant-green-agar plates made from the degenerated ovules if any were present. Any cultures that developed on the brilliant-green-agar plates were stained by Gram's method and if found to be Gram-negative rods, were inoculated into lactose-broth fermentation tubes. If the lactose-broth tubes were not fermented, antigen was prepared from the culture and tested by a serum positive for *S. pullorum*.

From the twenty-three birds autopsied, which had been identified as carriers of pullorum infection by the tube method but had failed to react by the rapid method, *S. pullorum* was isolated from six. These birds were tested by both methods before it had been learned that in many cases three to five minutes were required for agglutination to occur. Blood samples were secured from a number of these birds at the time of autopsy and were found to agglutinate by the rapid method in two to three minutes. Those birds undoubtedly would have reacted positively by the rapid method had the results been observed at the end of three to five minutes.

Bird 93 at the time of autopsy caused agglutination in less than two minutes by the rapid method, but gave a cloudy reaction by the tube method.

Summary

A total of 2,159 birds from twenty-six flocks were tested by the simplified agglutination test of Bunyea, Hall and Dorset and

the results compared with results of the tube method in testing the same birds for the identification of carriers of pullorum disease infection. The two tests corresponded entirely in the testing of 1,969 (91.15 per cent) of the birds. In 190 samples the two tests did not agree. One hundred twenty-seven of these birds were positive by the tube method and negative by the rapid method. Had we known in the beginning that from three to five minutes may be required for flocculation to occur in many of the positive sera, the results of the two tests would have corresponded much more closely than these figures indicate.

Sixty-three birds that failed to react by the tube method gave a positive reaction by the rapid method. Many of these were in flocks giving a relatively large number of cloudy reactions and probably were carriers of pullorum infection and should have been culled out of their respective flocks.

Unpreserved commercial antigen was modified by the use of several preservatives and the efficiency of each compared to that of the commercial antigen. None of those used was found to be any more efficient or satisfactory than the commercial antigen.

Twenty-three birds which reacted by the tube method but failed to react by the rapid method were purchased. These were autopsied aseptically and the heart, liver and ovules cultured, the ovules on brilliant-green agar. Cultures growing on the brilliant-green agar, if Gram-negative, were inoculated into lactose-broth fermentation tubes. If this medium was not fermented, a suspension of the organisms was made and tested with a positive serum. *S. pullorum* was isolated from six of these birds.

It was found that some experience is necessary before one can intelligently evaluate the tests by the rapid method, and one who wishes to use it should become familiar with the technic of making the test and with the appearance of positive and negative reactions.

The advantages of the rapid test are that the tests can be made on the premises, only a small amount of glassware is required and the results can be obtained and the reactors removed from the flock almost immediately. Pathologists are agreed that in order that the carriers of pullorum infection be eliminated from a flock in the shortest possible time, the blood sera of the birds should be tested at frequent intervals and the reactors that are identified culled out after each test.

The fact that the blood samples do not have to be shipped to a distant laboratory makes it possible to test a flock by the rapid

method at any time during the year. If a flock is tested by the tube method, it is necessary to pack the tubes in ice, except during the winter, if they are to be shipped for any distance.

After a flock is once entirely free from pullorum disease, it may be tested yearly, at the season of the year when egg-production is at a minimum.

Conclusions

It is concluded that in the hands of an experienced operator, if from three to five minutes be allowed before a diagnosis is made, the simplified agglutination test for the detection of carriers of pullorum disease infection is fully as efficient as the tube test.

It has a number of advantages over the tube test.

1. It is entirely applicable to field use.
2. Only one drop of blood is required, so it has no bad effect on the fowl.
3. Testing can be done at any time during the year.
4. Very little glassware is required.
5. Cloudy precipitates do not interfere.
6. It is so easily applied that repeated tests can be made, making it possible to rid the flock entirely of carriers in the least possible time.

It was found that leg-bands could not be dispensed with.

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Prize in Physiology

At a meeting of the Suburban Cattlemen's Association, which was held at Wayne, Pa., on February 6, a purse of $25.00 was presented to the University of Pennsylvania, to be awarded to the student who makes the highest mark in veterinary physiology during this year. In addition to the purse, a cow was given to the University for the use of Dr. R. S. Amadon in his experimental work in pharmacology. This action was taken in recognition of the splendid work being done in veterinary physiology by Dr. Amadon.

A MODIFICATION OF THE MEDIUM OF SWEANY AND EVANOFF FOR CULTURING THE ORGANISM OF BOVINE TUBERCULOSIS

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The securing of direct cultures of *Mycobacterium tuberculosis* from tuberculous material of human or avian origin is not a difficult procedure. If means are used to eliminate contaminating microörganisms which may be present and the infective material is seeded on some simple medium such as Dorset's egg medium as modified by Lubenau, or the crystal-violet-glycerin-water-potato medium of Corper and Uyei, colonies of *Mycobacterium tuberculosis* will usually develop in from two to eight weeks. However, culture media which may be satisfactory for the growth of the human and avian forms of *Mycobacterium tuberculosis* are usually found to be entirely unsuited for the cultivation of the bovine form of the organism. In order to obtain cultures of *Mycobacterium tuberculosis* from bovine sources, the procedure which is usually followed is to inoculate guinea pigs with portions of the infective material and eventually make cultures from lesions of tuberculosis which may become established in the inoculated animals. To obtain cultures by this procedure usually requires considerable time and the use of experiment animals, which often is expensive.

Recently Sweany and Evanoff described a medium for direct culture of the bacilli of bovine tuberculosis. Without preliminary passage of the organisms through guinea pigs they were able to obtain by direct culture from the infective material positive cultures in each of seventeen attempts. This is obviously a distinct advance in an important phase of research in tuberculosis.

In the attempt to prepare the medium devised by Sweany and Evanoff, certain technical difficulties were encountered which seriously detracted from the practicability of the procedure. Believing the method to possess sufficient value to warrant its use experimentally, I worked out a slight modification by which the medium is relatively easy to prepare, and which gives results that are comparable to those recorded for the original medium.

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The essential features of the medium of Sweany and Evanoff are the absence of glycerin and the use of a combination consisting of fresh meat, milk, cream and eggs. In preparing the medium by the procedure described by Sweany and Evanoff it is necessary to soak overnight 450 gm. of finely ground veal in 315 cc of sterile fresh milk. The next morning the mixture is filtered and the filtrate is reckoned as 70 per cent of the total milk-cream mixture, making it necessary to add cream to the amount of 30 per cent of the total. As an example: If the filtrate amounts to 300 cc, representing 70 per cent, 1 per cent would be 4.28 cc. Multiplying 4.28 cc by 30 = 128.5 cc, which is the amount of cream to be added, bringing the total of the veal-milk-cream mixture to 428.5 cc. Eggs to a volume of twice this amount are then added.

The difficulty encountered in following the foregoing procedure is that of obtaining a sufficient amount of filtrate from the veal-milk mixture. By every means available I was able to obtain but a fraction of the amount one should secure. Attempts were made to filter the mixture by wringing it through gauze and by the use of a cylindric type of meat-press, but neither of these methods was satisfactory. In order to obviate this difficulty the method was modified as follows:

1. Two hundred fifty grams of freshly ground lean round steak is added to 100 cc of distilled water and soaked overnight at ice-box temperature. In the morning it is autoclaved at 15 pounds for thirty minutes. If the meat mixture is permitted to cool before being used it may exhibit a tendency to gel. This can be overcome by reheating the mixture in a water-bath just before using. It is not necessary that the meat mixture be filtered.

2. A mixture of the following is then made: autoclaved meat broth, 100 cc; sterile standard cream, 50 cc; sterile whole milk, 50 cc; and eggs (whites and yolks), twice the total of the meat-cream-milk mixture, or 400 cc.

3. The mixture is thoroughly stirred with an egg-beater and strained through four layers of sterile gauze.

4. The mixture is tubed and the tubes placed in a slanting position and sterilized at once in the Arnold sterilizer or inspissator as follows: On the first day, the tubes are placed in the warm sterilizer and the temperature is slowly increased to 75° C.; the sterilizer is held at this temperature until the medium solidifies, and then the temperature is increased to 85° C., where it should be kept for one hour. On the second, third and fourth days,

sterilization is continued for one hour at 75° C. It is very important that the temperature be kept at the exact degree indicated in order to obtain satisfactory sterilization.

5. The tubes are incubated at 37° C. for two or three days before using.

The milk and cream is sterilized in the Arnold sterilizer at 100° C. for forty-five minutes on two successive days.

The eggs used should be perfectly fresh and washed in running water to remove any extraneous filth. They should then be immersed for ten to fifteen minutes in 80 per cent alcohol before being used. All glassware and other apparatus used in the preparation of this medium should be sterile, and the usual precautions should be taken when the medium is tubed, to reduce the danger of contamination to a minimum.

Comment

Medium prepared according to this method has been used in my laboratory for a period of approximately one year. During this time I have observed the results obtained following its use for a variety of purposes. It has been used for the routine carrying of stock cultures of the bovine bacillus of tuberculosis with satisfaction and for the isolation of the organism direct from bovine lesions of tuberculosis and from the tissues of rabbits and of guinea pigs possessing tuberculous lesions which were induced by the inoculation of emulsions prepared from the lesions of bovine tuberculosis. My experience with this medium prompts me to say that for the cultivation of *Mycobacterium tuberculosis* obtained from bovine sources it is much superior to other media I have tried.

In one series of ten experiments in which direct cultures were attempted from infective foci of ten tuberculous cattle, positive results were obtained in nine of the experiments; the bacterial colonies appeared in some instances as early as twenty-four days. The average lapse of time before positive results were observed was forty-four days. In the one experiment in which positive results were not obtained all of the culture tubes became overgrown with contaminants within two weeks after inoculation, and were discarded. Cultures were attempted also with portions of the same material on the crystal-violet-glycerin-water-potato medium of Corper and Uyei and on the egg-yolk-glycerin combination of Miraglia. In two of the experiments positive results were obtained with the potato medium, whereas all but one of

the egg-yolk-glycerin series remained negative after a period of fifty-eight days. All of the material used in these experiments was subjected to preliminary treatment with caustics in order to eliminate as many of the contaminating bacteria as possible. Detailed reports of this and other studies pertaining to the cultivation of *Mycobacterium tuberculosis* are in preparation.

From the foregoing brief summary of a relatively small series of experiments, the dependability of the modified medium of Sweany and Evanoff seems established and it is my opinion that for the cultivation of the bacillus of bovine tuberculosis it is the medium of choice.

In preparing the medium by the modified procedure, the initial contamination of the various ingredients is materially reduced by subjecting the ground meat to sterilization and by it being unnecessary manually to extract the fluid portion of the meat mixture by squeezing or wringing it through gauze. Even though a satisfactory yield is obtained by the use of a meat-press, the precautions necessary to prevent undue contamination are many. By autoclaving the meat infusion before it is mixed with the rest of the constituents, it is seldom that a tube of medium is lost because of the failure to obtain complete sterilization.

This medium is not difficult to prepare and for one interested in obtaining cultures of *Mycobacterium tuberculosis* of bovine origin direct from diseased tissues it is most desirable.

Summary

A modification of the medium of Sweany and Evanoff for the cultivation of the bovine form of *Mycobacterium tuberculosis* is described. The modified medium apparently possesses the merits of that made according to the original method and in addition is easier to prepare. Experimental data indicate the superiority of this medium over certain others for the isolation of the organism directly from infected foci of bovine tuberculosis.

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SANTONIN AS AN ANTHELMINTIC FOR SWINE*

By HARRY MORRIS *and* J. A. MARTIN

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A few years ago, Extension Circular No. 96 was edited by Department of Animal Pathology in conjunction with the Swine Department of Louisiana State University. This circular showed in picture form the value of controlling ascarids in swine. It was short, concise, and was not based on scientific investigation as it was intended to cover only the field of an extension circular.

For some unknown cause this circular was widely distributed, due probably to the fact that it was reviewed in some scientific journals as well as many farm papers. In a short space of time, a number of manufacturers and distributors of anthelmintics took issue with the publication, because it had not recommended the use of their products.

The manufacturers and distributors of santonin argued that their product was as efficient as any other vermifuge on the market. They contended also that it was non-toxic. To establish the scientific efficiency of santonin, they offered to make an appropriation for this investigation. The offer was accepted by the Experiment Station of Louisiana State University.

Santonin is an active principle obtained from santonica. Santonica is derived from the dried flower-heads of *Artemisia maritima*.

Habitat: Northern Middle Europe and Asia.

Santonin occurs as colorless, shining, flattened, prismatic crystals. It is odorless and nearly tasteless when first put in the mouth, but afterwards develops a bitter taste. It is not altered by exposure to the air but turns yellow on exposure to light. It is nearly insoluble in cold water, but is soluble in 40 parts of alcohol, in 140 parts of ether, and in 4 parts of chloroform.

Santonin has long been used as an anthelmintic for the removal of ascarids in man and other animals. It has been looked upon with favor, due to the fact that it was efficient and not a gastro-intestinal irritant. Hall[1] advises that repeated doses are much more effective than single doses. It has been used in a combination with calomel without additional purgative.

*These investigations were made possible through the financial cooperation of Mr. C. J. Horney, Importing Department, Amtorg Trading Corporation. Received for publication. January 5, 1931.

Technic: The animals used in this experiment were pigs ranging in weight from ten to seventy pounds. They were purchased from farmers in the vicinity of Baton Rouge. A great many of them were obtained from the alluvial section on the west side of the Mississippi River. Care was taken to buy no pigs that had previously been treated for parasites. Following the drought during the summer of 1930, it was difficult to obtain pigs showing a heavy infestation of ascarids.

Specially constructed crates were used as retainers for the animals in the experiments concerning dosage and toxicity. The dimensions of the crates were 18 inches wide, 30 inches high, and 36 inches long, with a floor of galvanized net wire. This wire floor was elevated four inches above the bottom of the crate. The crate was placed in a galvanized iron pan with three-inch sides. The crates thus constructed prevented the animal from coming in contact with urine and feces and facilitated the collecting of accurate data.

All pigs used in the experiment were fasted for a period of twenty-four hours before the anthelmintics were administered.

Every animal used in the experiment was thoroughly examined for the presence of parasites and indications of toxicity. The animals were killed by bleeding and the entire digestive tract was removed immediately, to prevent migration of the ascarids. The intestines were opened with an enterotome.

1. Tests with Santonin

Ten pigs were given doses of santonin alone, ranging in amounts from one-sixth grain to ten grains per pound body weight. The santonin was given in gelatin capsules as a single dose. No worms were passed and the animals showed no physical symptoms of toxicity except a discoloration of the urine. In some cases the urine was orange colored while in others it had a reddish discoloration. Pigs were posted on the seventh day following treatment. No worms were found in the stomach, but 30 per cent were found in the small intestines and 70 per cent were found in the large intestines. Those in the small intestines were alive and appeared normal, while 45 per cent of those in the large intestine were dead.

Control: Two pigs were given the same care as those above, except they received no treatment other than empty gelatin capsules. No worms were passed. Postmortem showed all the ascarids in the small intestines.

2. Santonin and Calomel

Sixteen pigs were used in testing the anthelmintic value of santonin and calomel. The pigs were uniform in size and were of average weight (32 pounds). After fasting for twenty-four hours, the pigs were given one-half grain of santonin and one grain of calomel per pound body weight for two consecutive days. Worms were passed for a period of four days and the animals were posted on the seventh day following treatment. Twenty-five per cent of the total number of ascarids were passed in the feces before the pigs were posted. Six per cent were found in the small intestines and 69 per cent were found in the large intestines. Of the 69 per cent found in the large intestines, 54 per cent were dead and the remainder, although alive, were not normal.

Control: Three pigs from the same lot as those above were given only empty gelatin capsules. No worms were passed. Postmortem showed a total of 24 live ascarids in the small intestines.

Three additional pigs of the same weight were given two grains of calomel per pound body weight in capsules. No purgation. No worms were passed. Postmortem was held on the seventh day following treatment. The small intestines were slightly inflamed and 20 adult ascarids were found in the small intestines.

3. Santonin, Calomel, and Magnesium Sulfate

Nine pigs (average weight, 18 pounds) were given one-sixth grain of santonin and one-half grain of calomel for two consecutive days, followed in twenty-four hours after last dose of santonin and calomel with one gram of Epsom salt per pound body weight. The santonin and calomel were given in gelatin capsules and the Epsom salt was given in solution by means of a stomach-tube. Pigs were posted on the seventh day after the administration of the Epsom salt. Eleven per cent of the total number of ascarids were passed before the administration of the salt. Eighty-nine per cent passed within twenty-four hours after the administration of the salt. The above-quoted dosage of santonin and calomel followed by Epsom salt proved to be 100 per cent effective for the removal of ascarids.

4. Varying Amounts of Santonin with Epsom Salt

(A) Ten pigs (average weight, fifteen pounds) were given one-sixth grain of santonin per pound body weight, followed in twenty-four hours by one gram of Epsom salt per pound body

weight. The santonin was given as a single dose and the Epsom salt was administered in solution with a stomach-tube. Some mature and a few immature ascarids were passed for a period of three days. Postmortem showed that 25 per cent of the total number had passed in the feces and the 75 per cent not passed were immature ascarids, measuring from five to ten centimeters in length. They were identified as ascarids by Dr. R. L. Mayhew, parasitologist at this Station. Effort was made to repeat this phase of the work in regard to the use of larger doses of santonin for the removal of immature ascarids, but unfortunately no more animals were obtained with heavy infestations with ascarids in this stage of development.

(B) Ten pigs (weights ranging from fifteen to thirty pounds) were given one-sixth grain of santonin per pound body weight for two consecutive days, followed in twenty-four hours by one gram of Epsom salt per pound body weight. This dosage removed 90 per cent of the ascarids.

(C) Eighteen pigs (weights ranging from fifteen to twenty-four pounds) were given two-thirds grain of santonin per pound body weight in one dose. This was followed in twelve hours by one gram of Epsom salt per pound body weight given in wet mash. In this test 98 per cent of the ascarids were passed within forty-eight hours. Good purgation was obtained. Postmortem revealed no signs of toxicity.

(D) Fifteen pigs (weights varying from fifteen to twenty pounds) were given one-third grain of santonin per pound body weight on two consecutive days, followed in twelve hours with one gram of Epsom salt in solution administered with a stomach-tube. This method proved to be 98 per cent effective.

Control: Six pigs from the same lot as those used above and of the same average weight were given only empty gelatin capsules. No worms were passed. Postmortem showed an average of ten ascarids in the small intestine per animal.

5. Santonin and Castor Oil

Four pigs (average weight, thirty-seven pounds) were given one-half grain of santonin and thirty cubic centimeters of castor oil, with a stomach-tube, at same time. This dosage gave no symptoms of toxicity. Good purgation was obtained and proved to be 82 per cent effective for the removal of ascarids. Of the remaining 18 per cent found in the digestive tract on postmortem,

50 per cent were found in the small intestines and the other 50 per cent in the large intestines. The worms were alive.

6. Santonin and Beta Naphthol

Four pigs (weight, thirty pounds) were given one grain of santonin and one-half grain of beta naphthol per pound body weight. Symptoms of nausea were noticed in six hours and the animals showed physical symptoms of poisoning. In forty-eight hours the pigs developed diarrhea (feces watery). The animals were posted on the fifth day following treatment. No ascarids had been passed and on examination one worm was found in small intestines. The stomach and intestines were highly inflamed.

Control: Two pigs were given the above dosage of beta naphthol. These animals showed the same symptoms of toxicity as described above. No worms were passed and no worms were found in the digestive tract on postmortem.

One pig (weight, thirty pounds) was given ten grams of santonin in gelatin capsule. No symptoms of toxicity were noticed except the discoloration of the urine and slight inflammation of the kidneys. The animal passed no worms and none were found on postmortem examination.

Discussion

In a review of the above tests it will be observed that desired results were not obtained in the use of the combination of santonin and calomel. While no toxic effect was noted in the pigs, proper purgation was not obtained. Postmortem examination showed that the ascarids that were not passed were more or less distributed in both the large and small intestines. Controls or untreated pigs showed all the worms located in the small intestine. A large percentage of these ascarids were active and capable of migration.

It will be noted also that the use of Epsom salt as a purgative following the administration of santonin in varying doses gave the desired results. The Epsom salt, when administered in solution by means of a stomach-tube or given in wet mash, has proved to be equally effective as a purgative.

From a limited number of experiments with the use of santonin and beta naphthol, desirable results were not obtained.

Small doses of santonin appeared to be more effective for the removal of adult ascarids than those in the immature stages of development.

Comparative Tests

Four anthelmintics were used in the comparative tests:

1. Santonin
2. Oil of chenopodium, U. S. P.
3. Carbon tetrachlorid, C. P.
4. Tetrachlorethylene

The tests were conducted in the animal-house of the new Animal Pathology Laboratories. Five rooms with cement walls and cement floors were used in conducting these tests.

The animals were uniform in physical condition and size. All animals were fasted for a period of twenty-four hours before administration of the anthelmintics.

The results obtained in the comparative tests were very unsatisfactory concerning the anthelmintic value of the drugs, due to the very light ascarid infestation of the animals used in the experiments. This light infestation might have been due to the fact that these tests were run during the months of August and September, following the severe drought of 1930. In this semi-tropical climate, internal parasitic infestation seems to be more or less in direct proportion to the rainfall. The comparative toxicity tests of the various anthelmintics were satisfactory.

Test 1. Santonin

Thirteen pigs (average weight, fifteen pounds) were given two-thirds grain of santonin per pound body weight, followed in twelve hours by one gram of Epsom salt per pound body weight. The salt was given in wet mash.

Observation: Fourteen ascarids were passed in thirty-six hours. Animals showed no symptoms of toxicity.

Postmortem: One ascarid was found in the small intestine. No inflammation.

Test 2. Oil of Chenopodium

Thirteen pigs (average weight, fifteen pounds) were given 1.5 cc of oil of chenopodium, administered in hard gelatin capsule, followed immediately with 30 cc of castor oil administered with a stomach-tube.

Observation: Within two hours after administration, symptoms of nausea were noticed in six of the animals. No further symptoms of toxicity were noted. Three ascarids were passed within forty-eight hours. The animals were killed after the seventh day.

Postmortem: Three ascarids were found in the small intestine. The stomach and small intestines were inflamed.

Test 3. Carbon Tetrachlorid

Thirteen pigs (weight, seventeen pounds) were used.

Dose: Four cc of carbon tetrachlorid diluted with water to 15 cc and administered with a stomach-tube.

Observation: All pigs showed physical symptoms of toxicity. One pig died within forty-eight hours after administration of the drug. No worms were passed.

Postmortem: The dead pig showed a highly inflamed digestive tract. The remainder were posted on the sixth day following treatment. The digestive tract was highly inflamed. There was marked constipation. Four ascarids were found in the small intestine.

Test 4. Tetrachlorethylene

Seventeen pigs (average weight, twenty-four pounds) were used.

Dosage: Varying from 2 to 24 cc, in soft gelatin capsules. Twelve pigs were given no purgative. The remainder were given one gram of Epsom salt per pound body weight in mash.

Observation: No signs of toxicity were found in any of the animals. Three ascarids passed from lot receiving no purgative.

Postmortem: No signs of inflammation were found when the pigs were posted on the seventh day. The twelve animals receiving no purgative showed the presence of two ascarids in the small intestines.

Controls: Nine pigs (average weight same as the lots above) were given the same care as the other animals. No worms were passed. Postmortem revealed the presence of ten ascarids in the small intestines.

Other parasites: During the course of the tests, a great many other intestinal parasites were found. Probably the most common was the *Macracanthorhynchus hirudinaceus*, or thorn-headed worm. In pigs over three months of age three to thirty worms of this species were found firmly attached to the intestinal wall. The combination of santonin and calomel did not remove over eight per cent of these parasites.

Trichuris suis (whipworm) was found firmly attached to the walls of the cecum and colon. This parasite was very common. The above combination showed no evidence of being able to remove them.

Stephanurus dentatus (kidney worm) was very common in the older pigs. This parasite was found in the tissues surrounding the kidneys and also in the liver. Thirty-five worms of this species were removed from the liver of one pig.

Microscopic examination revealed the presence of intestinal coccidiosis in twenty per cent of the animals. A great many of the animals showed the presence of lung worms.

SUMMARY

From the preceding data the following conclusions might be drawn:

1. Santonin, if properly administered, is an effective anthelmintic for the removal of adult ascarids in swine.
2. The value of santonin as an anthelmintic for immature ascarids should be given further study.
3. Results indicate that the efficiency of santonin depends to a large extent, not upon the amount given, but upon the method of administration and purgation.
4. Santonin and calomel, as recommended as an anthelmintic for swine, are ineffective, due to the lack of proper purgation.
5. The combination of santonin and calomel, followed in a few hours by a saline purgative, proved to be highly efficient.
6. Santonin alone, followed by a saline purgative, gives equal results.
7. The results seem to indicate that santonin in large doses is non-irritating to the digestive tract.

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Radio Program for Dog-Owners

In the first radio program of its kind, designed particularly for dog lovers, a blind war veteran has brought to the air a series of programs for eulogizing dogdom and advising dog-owners on the care of their pets.

Sponsored by Spratt's Patent Ltd., makers of dog and pet rations, these programs, featuring Reginald DeKoven White, a blind war veteran, went on the air for the first time March 3, over Stations KFI-KECA, KGO-KPO, KGW and KOMO, offering interesting dog stories, news flashes and hints on the care, breeding and training of dogs.

There will be eight broadcasts in the series, to be conducted from 5:30 to 5:45 p. m. each Tuesday, Pacific Time.

SOME COMPLICATIONS OF SORE MOUTH IN LAMBS*

By I. E. NEWSOM *and* FLOYD CROSS

Colorado Agricultural Experiment Station

Fort Collins, Colo.

Sore mouth is so commonly seen in feeder lambs that its appearance soon after shipping is taken as a matter of course. Ordinarily little papules develop at the commissures of the lips, which are soon covered with an exudate, which in turn dries and turns brown in color. These crusts sometimes become quite thick and the process may extend on the margin, until both lips are covered. Many animals never show more than a few crusts at the commissures. Underneath the scab the tissue is red and swollen and in some instances the condition is so painful as to cause the animals to refuse to eat. Sometimes the condition spreads to the nostrils and to the mucous membrane inside the mouth. Usually the process heals spontaneously within two weeks and the lambs return to normal.

It is the purpose of this paper to call attention to certain extensions that have impressed the authors and have increased the gravity of the disease to the feeder. Under conditions that tend to lower the vitality of the animals, this apparently harmless malady may result in lesions developing in other portions of the body that may cause death.

It is not surprising that lesions of the tongue are occasionally seen, as one might expect these to develop by contiguity. Where the tongue is affected the tissue change that is commonly associated with diphtheria in calves is seen. Circular patches covered over with thick, grayish, cheesy, necrotic material are readily observed. Sometimes the disease process extends to the hard palate.

Probably the most frequent and the most constantly overlooked lesion is in the omasum. It usually begins as an ulceration on the margin of the longer leaves near the opening and may extend to involve all of these structures. In extreme cases all of the leaves may be destroyed by necrosis. The less extensive ulcers may be missed because the exudate is grayish, but if the surface is scraped, the leaf at the base has a very dark red color. Often times the area around the opening of the omasum is quite edem-

*Contribution from the Section of Veterinary Pathology, Colorado Agricultural Experiment Station. Received for publication, January 6, 1931.

atous and thickened. In some cases the organ appears dark red to black when viewed from the outside.

Occasionally the ulceration is found on the mucous surface of the reticulum and still much less often in the rumen. In these organs the diseased areas are more or less circular, with a piling-up of the necrotic, cheesy material on a very dark, angry red base, visible when the necrotic material is scraped off. When any of these lesions involve the whole wall, the serous layer is thickened with a fibrinous exudate and there may be adhesions of the

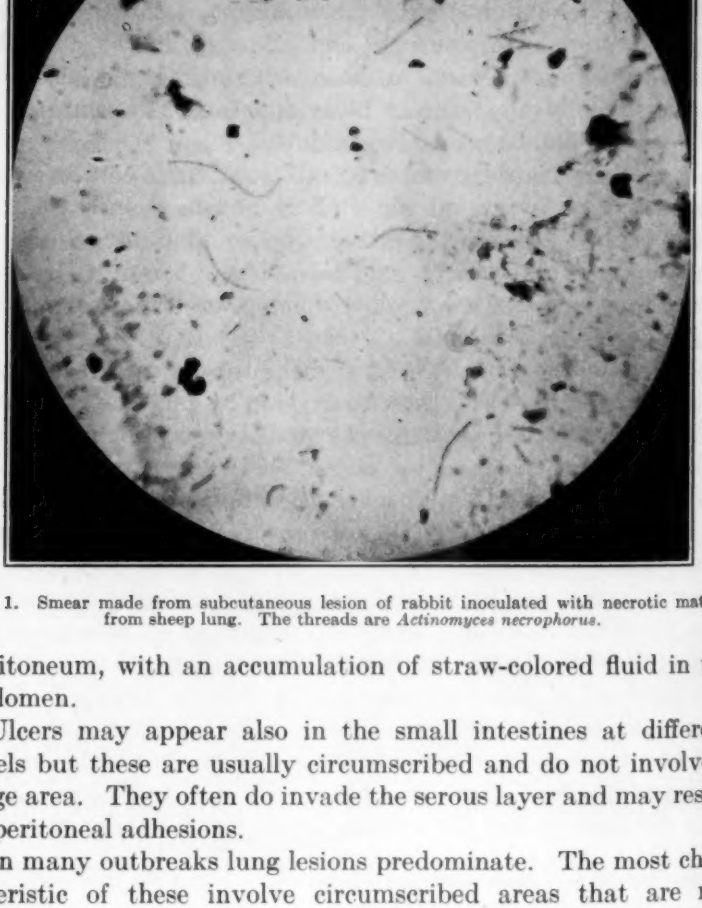

FIG. 1. Smear made from subcutaneous lesion of rabbit inoculated with necrotic material from sheep lung. The threads are *Actinomyces necrophorus*.

peritoneum, with an accumulation of straw-colored fluid in the abdomen.

Ulcers may appear also in the small intestines at different levels but these are usually circumscribed and do not involve a large area. They often do invade the serous layer and may result in peritoneal adhesions.

In many outbreaks lung lesions predominate. The most characteristic of these involve circumscribed areas that are not

limited to the dependent portions of the lung and result in a necrotic, round, cheesy mass. When involving the surface, these cause adhesions of the pulmonary and costal pleurae, with a consequent turbid exudate in the pleural cavity. The necrotic, grayish centers are surrounded with areas of reddish consolida-

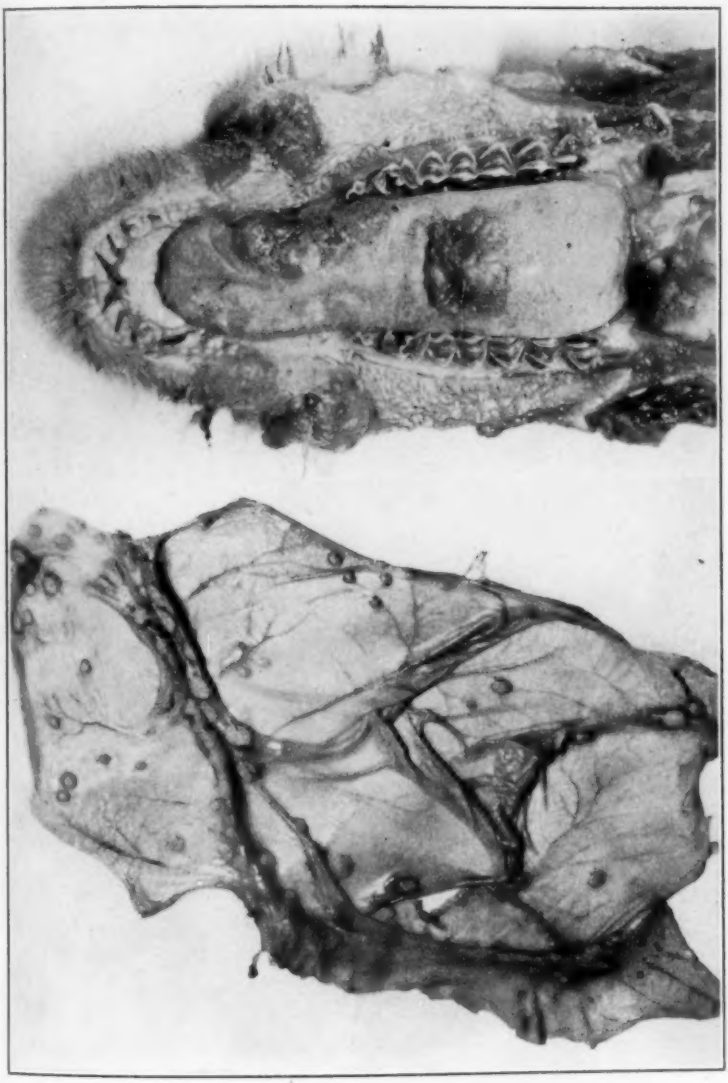

FIG. 2. (Above) Lesions on the tongue and cheeks. Note the resemblance to diphtheria of calves.

FIG. 3. (Below) Circular necrotic areas on the mucous surface of the rumen.

tion of varying size. There may be, however, normal lung tissue between these solidified zones.

The liver changes were observed for several years before their cause was appreciated. They consist of hundreds of miliary

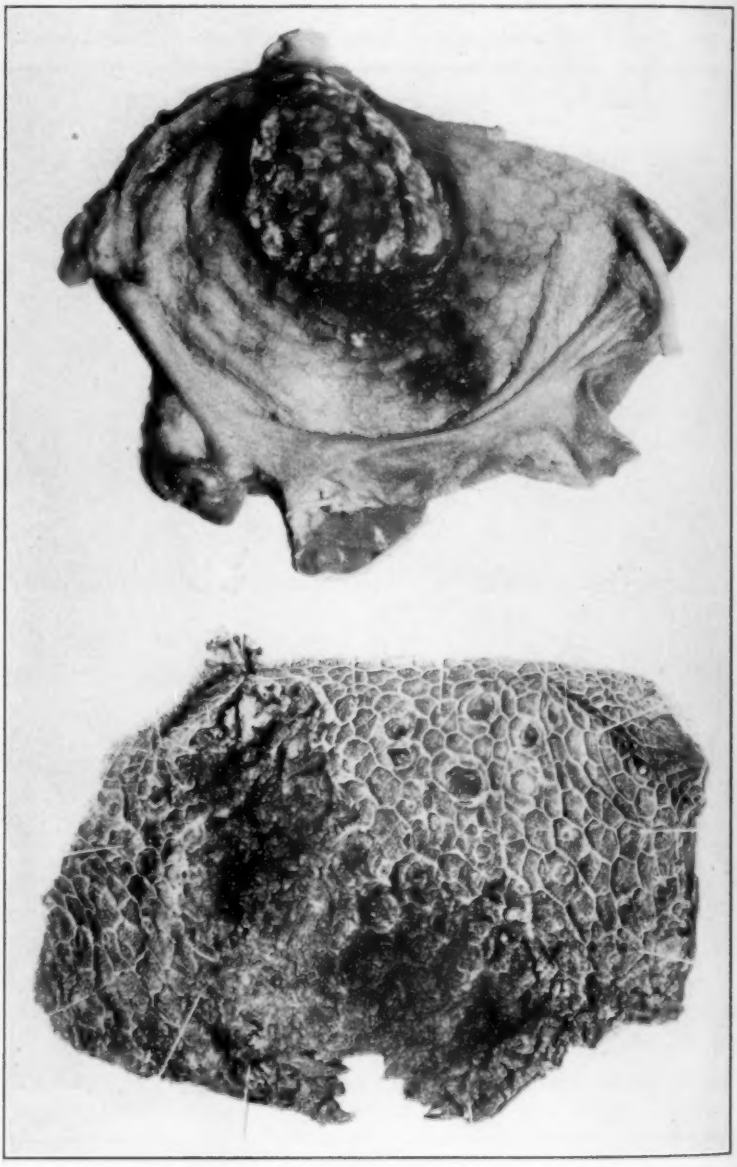

FIG. 4. (Above) A large necrotic ulcer in the reticulum.
FIG. 5. (Below) More diffuse ulceration of the reticulum, due largely, however, to fusion of the smaller circumscribed ulcers.

necrotic areas evenly scattered throughout the organ. Very rarely do they approach the size of the liver lesion seen in suckling lambs as a result of navel infection or the necrotic hepatitis of feeder cattle.

These complications may cause death some time after the lip lesions have healed and thus be regarded as separate processes. However, a history of sore mouth can usually be obtained.

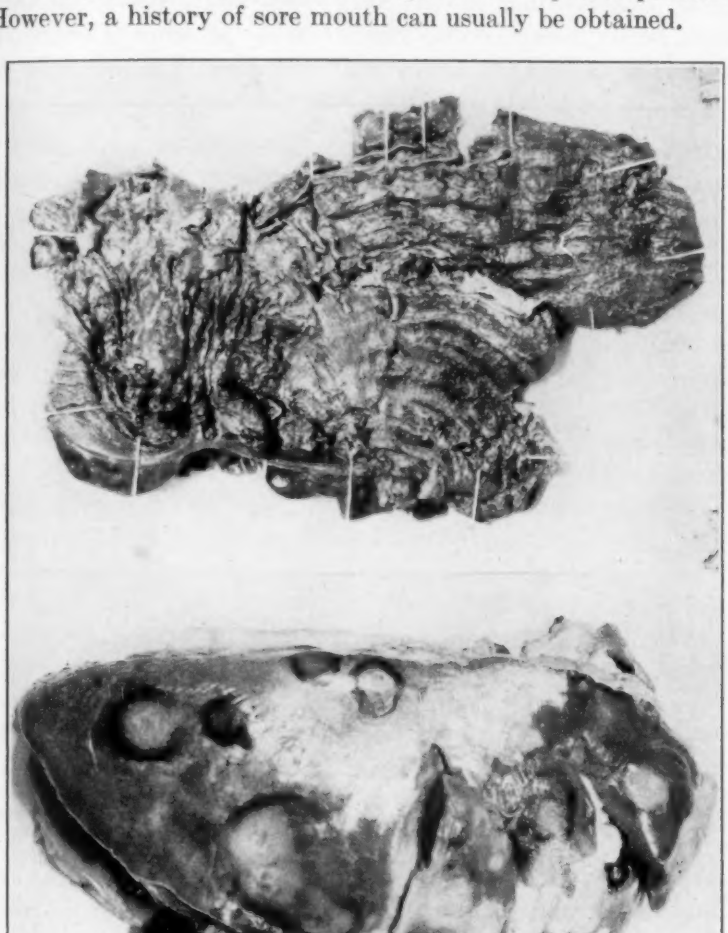

FIG. 6. (Above) Diffuse ulceration of the omasum, with destruction of the leaves. Only the leaf remnants are left.

FIG. 7. (Below) Necrobacillosis of the lung. Note the circular necrotic areas scattered throughout the lung tissue.

There is still some question about the etiology of sore mouth but there can seemingly be no doubt that these complications are due to invasion of *Actinomyces necrophorus*. These organisms, with their typical beading and tendency to grow out into long threads, are readily demonstrated in the lesions by staining with dilute carbol-fuchsin. Subcutaneous inoculation of the cheesy material into rabbits very consistently results in their death, with typical necrotic lesions and the presence of numerous thread-like beaded organisms.

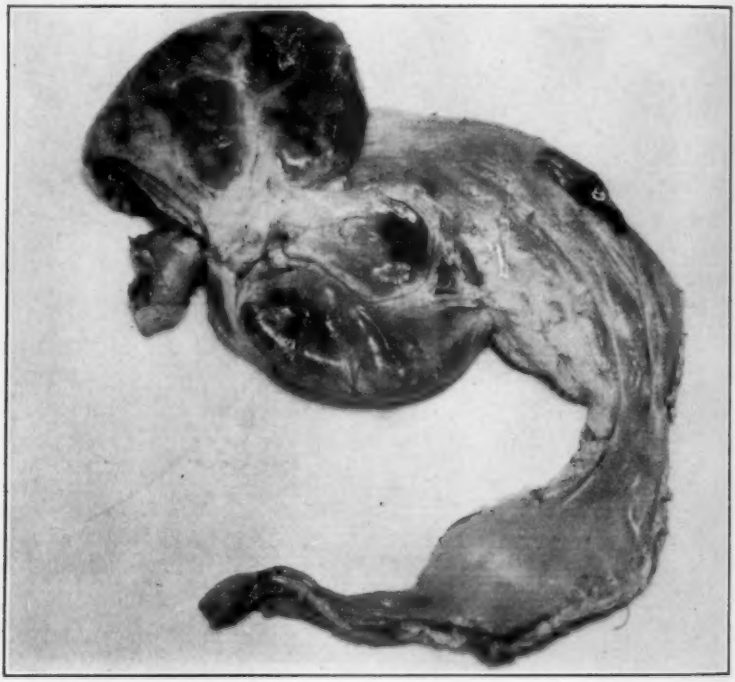

FIG. 8. An exterior view of the reticulum, omasum and abomasum of a sheep. The areas that appear dark are hemorrhagic lesions opposite to ulcerative surfaces on the inside.

Whether any measures can be adopted that will lessen the loss from these complications is still a moot question. For practical purposes it may be assumed that all feeder lambs when shipped will be exposed to the disease. A direct relationship between severe exposure, careless handling and the severity of the disease is believed to exist. Something can be done then to improve shipping methods. It has been customary to treat only the worst cases of sore mouth. It may be that treatment of all of them would result in fewer complications.

SOME FURTHER OBSERVATIONS ON DOG DISTEMPER

By G. W. DUNKIN *and* P. P. LAIDLAW

National Institute for Medical Research, Farm Laboratories, Mill Hill, England

1. The Durability of the Immunity Following Vaccine and Virus Administration

From time to time the durability of the immunity against distemper which follows the inoculation of vaccine and virus has been questioned, and although we had no reason to believe that the immunity thus conferred was of short duration, we considered it desirable to investigate the matter.

During 1928 and the early weeks of 1929, we issued some hundreds of doses of vaccine and virus to English veterinarians for use in their practices. In many instances the material was used for the immunization of privately owned dogs, but in others a certain proportion of the young entry to 39 foxhound kennels was inoculated. The immediate result of these inoculations was satisfactory and it remained for us to determine, if possible, whether the late result also was good. For this purpose we decided to confine our attention to foxhounds, first, because it was hoped that accurate data concerning them could be collected fairly easily, and secondly, because we considered that foxhounds were the most severe test of the efficacy of the prophylactic. In the British Isles it is unusual for a kennel of foxhounds to remain free from distemper for a year and we considered it probable that all hounds inoculated would be exposed to distemper infection at least once a year and evidence from such animals would be the more valuable.

The following questionnaire was drawn up and circulated to the Masters of Foxhounds of 39 packs scattered throughout the country:

NAME OF PACK

Number of hounds Vaccinated	Date of Dispatch of Vaccine	Date of Dispatch of Virus

1. How many of the hounds referred to above are still alive? Have any of these hounds been drafted to other packs?

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2. Has distemper broken out in your kennels since these hounds were inoculated? If so, how many times?
3. Are the inoculated hounds known to have come into contact with infected ones?
4. Have any of the inoculated hounds developed distemper since they were treated? If so, how many?
   Were the hounds seriously ill?
   Were there any deaths among them? If so, how many?
5. Any other information which you may have concerning this matter and which is not covered by the above questions will be gratefully received.

We have received replies from 35 packs and would point out that these have been compiled by the Masters themselves without the aid of the veterinary surgeons who undertook the original inoculations, with the exception of those concerning packs 16 and 21 in table I and pack 10 in table II.

The replies which we have received have been summarized in tables I and II. This separation into two groups was necessary because the data returned concerning two of the packs were so scanty that the replies were worthless for our purpose and in other cases the Master is unable to state that the inoculated hounds had been exposed to distemper infection.

Table I gives the number of hounds belonging to 23 packs which were inoculated with material supplied by us in 1928 and 1929. Of the 750 hounds originally inoculated, a certain number have been drafted to other packs when, as a rule, the after-history is unknown. There remain 650 hounds which are known to have been exposed to distemper infection at least once and sometimes several times. Nine of these hounds are said to have contracted distemper (approximately 1.4 per cent), and 2 of these hounds died (0.3 per cent), leaving 641 animals (98.6 per cent) immune. Over and above the 9 cases of frank distemper there are records of 26 hounds (packs 5 and 16) which suffered from an illness which might have been distemper. The veterinary surgeon attending the pack with the 20 sick hounds states that in his opinion the hounds did not have distemper and in the other case the Master is uncertain as to the diagnosis. There were no deaths in this group of doubtful cases. We are of the opinion that the doubtful cases should be excluded from the percentage calculations.

Of the 650 hounds known to have been exposed to distemper, a certain number have been drafted to other packs and a further

number have died from causes other than distemper, such as accidents, "yellows," etc. There remain 515 hounds alive and well in kennels, plus an unknown proportion of 82 hounds from packs 2 and 20. That is to say that more than 80 per cent of the

TABLE I—*Summary of results in 23 packs (650 hounds) known to have been exposed to distemper*

Pack	Hounds Inoculated	Dates of Inoculations	Hounds Still in Kennel	Hounds Known to Have Been in Contact with Distemper	Distemper Cases		Distemper Stated to Have Been:		Deaths	Percentage Immune
					Positive	Doubtful	Mild	Severe		
1	57	2-22-28; 2-1-29	50	19[1]	0	0	—	—	—	100
2	25	2-28-28; 1-9-29	?[2]	25[3]	0	0	—	—	—	100
3	20	2-1-29	18	20	0	0	—	—	—	100
4	59	4-19-28; 1-16-30	44	59	0	0	—	—	—	100
5	20	3-7-29	15	20	0	6	—	—	0	70 (?)
6	20	2-4-29	13	13	0	0	—	—	—	100
7	8	10-23-28	4	4	0	0	—	—	—	100
8	35	9-24-28; 3-11-29	25	25	2	0	—	2	0	92
9	30	4-22-28	24	24	0	0	—	—	—	100
10	10	10-22-28	7	7	0	0	—	—	—	100
11	16	1-3-29	15	16	1[3]	0	—	1	0	93
12	24	1-24-29	24	24	0	0	—	—	—	100
13	28	1-16-29; 1-30-29	17	23	3	0	1	2	2	86.9
14	40	10-2-28; 3-4-29	40	40	0	0	—	—	—	100
15	70	9-12-28	53	70	0	0	—	—	—	100
16	40	10-29-28	20	20	0	20[4]	—	—	0	0 (?)
17	50	1-6-29; 1-16-29	25	50	0	0	—	—	—	100
18	30	1-6-29; 1-28-29	22	30	0	0	—	—	—	100
19	75	1-23-28; 2-11-29	70[5]	70	0	0	—	—	—	100
20	57	7-25-28; 1-4-29	?[6]	57	3	0	3	—	0	94.7
21	8	10-26-28; 12-3-28	5	8	0	0	—	—	—	100
22	10	2-4-29	8	8	0	0	—	—	—	100
23	18	10-30-28; 1-28-29	16	18	0	0	—	—	—	100
Totals	750		515	650	9	26	4	5	2	

[1]These hounds were placed in contact with advanced cases of distemper.
[2]Number drafted uncertain, but all withstood distemper.
[3]This hound had chorea and is still affected. Drafted hounds known to be fit and well.
[4]Most of these puppies have been ill, as have uninoculated ones. Diagnosis doubtful.
[5]Some hounds are now in other kennels but after-history known to M. F. H.
[6]The exact number which were drafted is not known ("Only a few"). The remainder are still alive in kennel.

hounds exposed to distemper one or more times are still immune after one or two years in hunt kennels.

It may be added that in every case where the after-history of a drafted hound has been followed up, it has been found to be immune to distemper.

Table II shows that a further 214 inoculated hounds are still in kennel alive and well, but the Master cannot state that they

TABLE II—*Summary of results on 214 hounds not known to have been exposed to distemper*

PACK	HOUNDS INOCULATED	DATES OF INOCULATIONS	HOUNDS STILL IN KENNEL	KNOWN TO HAVE BEEN IN CONTACT WITH DISTEMPER	REMARKS
1	10	2-8-29	?	?	No information. Master satisfied
2	52	8-23-28; 2-11-29	37	?	Return inadequate for our purpose. Master dissatisfied
3	10	2-25-29	10	0	Master satisfied
4	17	8-24-28	13	0	Master satisfied
5	15	1-10-29	13	0	Master satisfied
6	12	1-7-29; 2-27-29	11	12	Contact with doubtful distemper. Master satisfied
7	38	3-21-28; 1-9-29	23	0	Master satisfied
8	10	2-25-29	10	0	Master satisfied
9	43	5-8-28; 12-17-28	22	1	It is not known what happened to drafted hounds except two which are well. Master satisfied
10	83	12-1-27; 9-10-28	70	0	Master satisfied
11	6	1-8-29	5	0	Master satisfied
12	44	12-3-28; 12-10-28	?	0	Distemper in kennels twice. Master states that none of the inoculated hounds developed distemper and he is satisfied
Totals	340		214		

have been in contact with distemper cases, either because distemper has not broken out in these kennels since inoculation was commenced or all sick hounds were isolated from the healthy ones. In the first case we would like to take some credit for the freedom from infection. In the case of pack 10, for example, we know that the Master and the veterinary surgeon are both convinced that freedom from distemper since 1928 is directly due to systematic inoculation of all young hounds. In the second case

we are convinced that it is almost impossible to prevent infection, once it gains a foothold in the average foxhound kennel, from spreading to susceptible hounds. We therefore believe that a fair proportion of the hounds in this group of 214 should be included in the number of immune animals. However, it is clearly impossible to know what precise figure should be allotted and we can but give the figures and allow the reader to judge for himself.

Putting everything together, we believe that this inquiry has shown that vaccine and virus inoculation has caused a solid and durable immunity, since the hounds so treated have been found to be immune in 98.6 per cent of cases and the death rate is down to 0.3 per cent. In Britain the incidence of distemper in young foxhounds is nearly 100 per cent and the mortality rate is frequently 50 per cent and may on occasions exceed 75 per cent.

2. The Conservation of Virus

We have always believed that regular, solid and durable immunity to distemper can be secured only by the inoculation of living virus as a final step in the immunization course. For the original series of hounds and dogs which were immunized with material supplied by us, we always issued virus in the form of a freshly made suspension of distemper-ferret spleen. We realized that such a preparation of virus was unstable and could not be relied on to remain useful for more than a few days, at most, and yet this preparation, within the somewhat narrow confines of Great Britain, gave satisfactory results. It was, however, clearly desirable to secure some more stable product which could be sent for considerable distances without significant deterioration, and for a long time we failed to secure such a product.

We have since found that carefully dried virus will remain potent for several weeks and we are now convinced that a dry virus is a reliable product, provided that the desiccation is carried out with sufficient precautions.

In the first place we might point out that it is far from easy to dry a protein powder, solution or suspension, completely. Ordinary dry casein powder usually contains over 10 per cent of water and a water content of this order is quite inadmissible when the preservation of distemper virus is under consideration. The residual water must be brought down to less than 2 per cent Secondly, the drying should be effected as rapidly as possible, preferably at a low temperature, over a desiccating agent which will not emit any trace of noxious fumes. In our opinion sulfuric

acid is best avoided, as there is always some risk of the evolution of sulfurous gasses.

Method: Spleens are collected aseptically from ferrets which have shown distemper symptoms for some days. The virus content of such spleens is always high. The spleens are cut in thin slices and distributed evenly over a Petri dish. The dish is placed in a reliable vacuum desiccator, over a plentiful supply of phosphorus pentoxid and a high vacuum is established as rapidly as is practicable. A high vacuum is very important. Under these conditions the spleen tissue should freeze, owing to rapid evaporation of water. The desiccator is transferred to the cold room. In 24 hours the spleen fragments should *appear* to be quite dry. They are removed from the desiccator and ground in a sterile mortar to a fine powder. The powder is distributed in small phials which are replaced in a desiccator with a fresh and liberal supply of phosphorus pentoxid. A high vacuum is established once more; the desiccator is returned to the cold room and drying is continued for at least three days further. At the end of this time the desiccator is filled with dry nitrogen, the phials removed and sealed up as rapidly as possible.

The procedure outlined above should yield a product containing less than 2 per cent of water—as determined by drying to constant weight at 115° C.—and should prove to be virulent after keeping for one month at room temperature. Some of our preparations have proved to be potent after storage for two months and even four months.

We believe that the drier the product the more stable it proves to be, but we have not yet tested a product which could be termed perfectly dry; this could be secured only by drying in high vacuum for at least three weeks.

We have information from two separate sources, where the point has been tested, that it is better to dry the virus below —10° C. We had not facilities to experiment with this variation but are convinced that the precaution is a good one on general grounds and because we know that distemper virus is unstable in the wet state unless it is kept frozen solid.

Whatever method of desiccation is adopted it should be done rapidly and thoroughly. On a recent occasion our high-vacuum pump broke down and we had to rely on the ordinary water pump. The final product looked dry but it proved to be avirulent after 26 days and was found to contain 6 per cent of residual

water when dried at 115° C. The product antecedent to this was stable for two months and had a residual water content of 1.1 per cent. We would emphasize the necessity of meticulous attention to detail if reasonably dry and active products are to be secured.

Dry products have been sent to America on several occasions and to several places on the Continent of Europe, and have proved to be active on arrival.

Live Stock Feeds Discussed

"There is only one definite, positive, federal requirement for the labeling of live stock feeds," G. L. Bidwell, of the food control laboratory, Food and Drug Administration, U. S. Department of Agriculture, told a convention of Virginia feedstuff dealers recently, "and that is: The net weight of contents must be printed on the label of the container in a plain and conspicuous manner."

Mr. Bidwell explained that although some state laws require a statement of the analysis and a list of the ingredients of feeds to be printed on the feedbag or other container, no such declarations are required by the federal Food and Drugs Act. However, if these or any other statements are printed on the sack, in obedience to a state law or for any other reason, the federal act requires that they be truthful and complete.

"The federal law does, however, have some control over what goes into the sack," he declared. "It defines as unlawful the mixture of a poisonous or harmful material with the feed and, if harmless non-food material is added to the feed, it must be declared in the labeling. A poultry scratch feed containing grit and charcoal, for example, must be labeled 'scratch feed with grit and charcoal,' since these materials are considered to have no food value. The national law makes only one definite and positive requirement as regards labeling, but it does demand that any labeling by a manufacturer be truthful and not deceptive or ambiguous. The Food and Drugs Act covers only those feeds, foods and drugs shipped in interstate commerce or manufactured and sold in the District of Columbia, or in the territories," he explained.

In his talk, Mr. Bidwell traced a typical regulatory action under the law, showing how the government samples a product sold unlawfully and follows the case to its termination in the courts.

CONGENITAL STRICTURE OF THE ESOPHAGUS

By GERRY B. SCHNELLE, *Boston, Mass.*

Angell Memorial Hospital

The subject was a twenty-four-day-old male Boston terrier.

It was presented for treatment on the twenty-first day of its existence, with a history of complete gastric intolerance for a day. It was then the "only child," in very good physical condition and *still nursing*. It was assumed that either there was something wrong with the mother's milk or that the pup was

FIG. 1. Larynx, dilated portion, constriction, and thoracic portion of the esophagus, and the stomach. (About half normal size.)

getting too much to eat and a formula was given with instructions to report if things did not go well.

Two days later, it was again brought to the hospital and was still returning its food almost immediately after eating. It was still in fair flesh but ravenously hungry. I gave it a small amount of meat which he ate with gusto, but it caused a swelling of the cervical portion of the esophagus. When digital pressure was exerted upon this distention, some of the meat was vomited. An attempt was made to force a hard catheter down the esophagus

but resistance was met with at the entrance to the chest cavity. The puppy was then etherized and further attempts were made to force a passage through without success. The owner was advised than an operation might help, but wisely decided to have the dog destroyed.

Autopsy showed a stricture (fig. 1) at the entrance to the thorax that would admit an applicator stick $\frac{1}{16}$ inch in diameter only when forced. The cervical portion of the esophagus was dilated so that a pouch almost the size of the stomach was formed.

It seems strange that symptoms did not appear before this and that the puppy had gained in weight nicely.

I cannot suggest treatment that would be helpful.

AN ABNORMAL CASE OF PARTURIENT PARESIS

By JAMES K. STROCKBINE, *Bedford, Pa.*

Subject: Grade Jersey cow, about six years old, in good condition.

History: One of two cows in a town herd. Parturition had been normal. Patient had been sick for ten days, the illness dating from the second day after freshening. The chief symptom was difficulty in eating. The owner was sure that there was something wrong with the teeth. On some days the animal was worse than on others. She was always able to get up, although sometimes she appeared weak in the hind quarters. Milk-production was not so heavy as in other years.

Symptoms: She appeared hungry, but exhibited great difficulty in chewing. Instead of swallowing, she would open her mouth and allow the bolus to fall out. When forced to move, she showed a very characteristic milk-fever-like walk.

Treatment: Inflation of the udder and stimulants hypodermically, with an uneventful recovery and a 100 per cent increase in the milk-flow over the previous ten days.

INFECTIOUS LARYNGOTRACHEITIS IN PHEASANTS

By GEORGE KERNOHAN, *Berkeley, Calif.*

Veterinary Science Division, University of California

During the past four years, an extensive investigation has been conducted along the line of infectious laryngotracheitis in fowls. From time to time other species were observed and a diagnosis

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made of infectious laryngotracheitis, based only on either the postmortem findings or the symptoms and postmortem findings. The symptoms consisted of a manifestation of extreme respiratory distress and the only lesions observed were inflammation of the upper larynx and trachea with a large mass of mucohemorrhagic exudate in the lumen of the trachea. No transmission experiments from fowl to other species or vice versa were made. Beach[1] was unable to transmit infectious laryngotracheitis from fowls to pigeons, doves or sparrows.

FIG. 1. Pheasant suffering from infectious laryngotracheitis

On December 17, a bird fancier reported an outbreak of disease among his fowls and pheasants. On the same premises, in pens adjacent to those of the affected birds, were ducks, domesticated mallards, peacocks, pigeons, doves, parakeets, canaries and many other species, besides many varieties of the more uncommon type of fowls, and several varieties of pheasants. The mortality among the diseased species was unusually high.

A number of the sick chickens and pheasants were brought to the laboratory, where a definite diagnosis of infectious laryngotracheitis was made in the fowls by reproducing the disease in normal birds with a suspension of virulent tracheal exudate administered by intratracheal instillation.

Attempts to transmit the disease from pheasants to fowls and pigeons, however, were unsuccessful. Normal pheasants were not available, so it was not possible to determine whether the disease could be passed from pheasant to pheasant. The disease has not occurred among any of the other species of birds on this place during the thirty days following the first observation. It would appear that the contagion is somewhat specific for the host and not readily transmissible from one to the other.

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[1]Beach, J. R.: Personal communication.

FIELD EXPERIENCES IN THE USE OF CALCIUM GLUCONATE

By J. ALLYN ROGERS, *Bryn Mawr, Pa.*

Having become satisfied that the use of calcium gluconate in treating milk fever is far superior to the inflation method, and feeling that I have treated a sufficient number of cows to prove its worth, I present the following facts to the profession.

My cattle practice lies in a residential section, where pure-bred Guernsey and Jersey cattle predominate. Many of my patients are family cows; that means well-cared-for individuals, over-fed, and under-exercised. Milk fever is very common among such animals. In the past I found individuals that did not respond to inflation of the udder, even when repeated five or more times. Such animals would drag along for days and then pass out of the picture. I know that my fellow veterinarians have had the same experience.

Therefore, when calcium gluconate was recommended, I was quite anxious to try it. I have now treated fifty cows without a failure. One animal required three treatments, two required two treatments, and the other forty-seven required but one.

Technic: Intravenous (jugular) injection direct from the stock bottle of 250 cc of a 10 per cent solution of calcium gluconate, administered slowly, at about body temperature. I have never used a solution that had precipitated the least bit or one that had precipitated and been heated to bring it back into solution.

Recovery of cows in complete collapse takes place in from fifteen minutes to two hours. As this treatment relieves the veterinarian of the responsibility of any complications with the udder, I consider it far superior to the old method.

In treating a limited number of cases of atony of the rumen, accompanied by a sudden drop in milk production, I have found the same dose very helpful in getting cows back to production in a day, which was not my experience in using medicines *per os*.

In the few cases of eclampsia of nursing bitches in which I have used calcium gluconate intramuscularly, in doses of 10 cc, I found recovery to be prompt, the puppies could stay with the bitch and there have been no recurrences of the condition.

POKEWEED BERRIES NOT POISONOUS FOR CHICKENS

By J. M. HENDRICKSON *and* K. F. HILBERT

Department of Pathology and Bacteriology
New York State Veterinary College, Ithaca, N. Y.

Pokeweed (*Phytolacca decandra*) is commonly found growing in various places on Long Island. During the latter part of September and first part of October, clusters of juicy purple berries are present on the plant. When these plants are present where poultry is ranged, the birds often feed on the ripened berries. Various poultrymen have inquired at the laboratory as to whether or not these berries are poisonous for chickens.

Search of the available literature failed to reveal any definite information with regard to the effects of these berries on fowls. The pokeweed is classed as a poisonous plant, but all the references deal with the poisonous properties of the root and stalks. No special mention of the toxicity of the berries for birds was found. That they are probably not poisonous to birds is indicated by a reference in "Nature's Garden," by Neltje Blanchan (Doubleday, Page & Co., 1900), to the fact that such wild birds as robins, flickers, woodpeckers, chewinks, grossbeaks and wild pigeons are in the habit of gormandizing on the berries preparatory to their fall journey to the Southland. It would be reasonable to assume from this that if the berries are harmless to these wild birds, they would be harmless also to domesticated fowls. Pammel[1] states that the young shoots of the pokeweed

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are sometimes used like asparagus, as the boiling apparently removes or destroys the toxic principle. He further states that the fresh shoots and the roots are poisonous and act as a violent but slow emetic, producing spasms, purging, convulsions and death by paralysis of the respiratory organs. Patterson[2] reports pokeweed causing heavy losses in a herd of swine at the Tuskegee Institute in Alabama, as a result of eating the roots and shoots. He fed one pig small pieces of the pokeweed root with definite signs of poisoning appearing the day following the feeding. He makes no reference to the berries.

In order to determine if pokeweed berries are poisonous for chickens the following experiments were made. Two Single Comb White Leghorn hens, two Rhode Island Red hens, and one Game cock were placed in individual cages and several clusters of ripe pokeweed berries put in the feed-cups. The birds had water at all times but all other feed was omitted. With the exception of one Rhode Island Red hen, all birds refused to eat the berries. This one hen ate them readily and consumed three or four bunches each day. She was fed for a period of three weeks on an exclusive diet of pokeweed berries and water and at no time showed any ill effects from it. The other four birds had the berries in their feed-cups for two days but did not eat any, as far as could be observed. It is possible that they may have consumed a few, but apparently these berries are not relished by all birds and probably would not be touched by them in most cases if other food was available. On the third day, these four birds were force-fed with twelve dozen berries each.

The force feeding was accomplished by opening the bird's mouth and dropping in the berries. They were swallowed without difficulty. As no ill results occurred in any of the birds, they were all fed twenty-four dozen each the next day. Twenty-four dozen berries were again fed each bird on the third day. No ill effects resulted from these feedings, so the dosage was increased and on the three succeeding days each bird was force-fed until the crop was distended to the size of a man's fist. At the end of this period, either the birds had overcome their objections to eating the berries or had developed a taste for them, as it was found that it was not necessary to force-feed them any longer. They ate the berries readily when they were placed in the feed-cups in the cages. They were fed in this manner all the berries they would consume each day for a period of two weeks. At the end of this time, our supply of berries was exhausted and the

feeding was necessarily discontinued. At no time did any of the birds show any ill effects from eating them. The birds were held in the cages for a period of three months following the conclusion of the feeding experiment. They remained perfectly normal during this time.

During the time the chickens were on the feeding experiment a Muscovy duck also was fed on the berries. As in the case of some of the chickens, the duck refused to eat the berries when they were placed in its feed-cup, so force feeding was resorted to. The force feeding was not so easily accomplished with the duck as in the case of the chickens. It was more difficult to get the berries in its mouth and it did not swallow them readily. However, three dozen berries were force-fed on each of four successive days with no ill results. At the end of this time the duck overcame some of its objections to the berries and consumed a fair amount of them from its feed-cup in the cage. For a period of two weeks, it was then fed daily all the berries it would consume. No ill results were observed at any time. The duck was held in the cage under observation for a period of two months following the conclusion of the feeding experiment and remained normal.

Conclusions

1. Ripe pokeweed berries did not cause any symptoms of poisoning, or any ill effects, when fed in large amounts, over a period of approximately three weeks, to five chickens and one duck.

2. Some birds do not eat the berries readily at first but apparently develop a taste for them after consuming a few.

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At the Same Old Stand

The following announcement appeared in the Piper City, Ill., *Journal*, for March 12, 1931:

Broadcasting Station P. C. B.

This is to inform the general public that I have taken over the veterinary practice of Dr. W. M. Robertson and can be found at the same old stand prepared to answer calls promptly day or night.

I will also continue to practice auctioneering and solicit a share of your patronage in that line.

Very respectfully,

Phone 48. P. C. Ballou, V. S.

Nothing like having two strings to your bow.

HANDBOOK FOR VETERINARY SURGEONS. Fred Bullock, LL. D., Barrister-at-Law. 2nd edition. Bailliere, Tindall & Cox, London, 1930. Price, 5s. 4d., post free.

The call for a second edition of a literary product within a period of three years is a sufficient guarantee of its success, especially when the clientele is limited in numbers. The impression gained in perusing this book is that the author is a man of rare good judgment, and that his main motive has been to be as helpful as possible to others at whatever cost to himself. His knowledge of veterinary details is apparently as great as that of his chosen profession—the law; an unusual combination.

The book is divided into seven chapters and three appendices, as follows: Chapter I deals with the administration of the profession; Chapter II, with the rights and duties of the profession; Chapter III, with professional conduct; Chapter IV, with legal responsibilities and duties; Chapter V, with postgraduate studies; Chapter VI, with taxes and related matters; Chapter VII, with the government services. The appendices deal with acts and orders, Ministry of Agriculture leaflet on the disease of animals acts and useful addresses. Thus, in seven chapters, the author has given a concise résumé of information that is both interesting and profitable.

To the young British veterinarian entering practice, such a book should be invaluable. In the United States many of the statements would not apply because there is a different system of control, less formality and fewer entanglements with the law, for all of which we should be duly thankful. Different countries have different methods, and the system in one country is of only passing interest to the others. In this instance, however, we believe that the chapters on professional conduct and legal responsibilities and duties justify the possession of the book by veterinarians in any country.

The table of contents gives the main subdivisions of each chapter. The index is complete and the general make-up of the book reflects credit upon the publishers as well as the author.

In a preface to the first edition of this book, Sir John M'Fadyean stated as follows: "The author has laid the veterinary profession under a debt of gratitude for having provided, within comparatively small compass, a mass of information that will be of the greatest importance to the younger members and is not readily obtainable from any other source."

DOLLAR'S VETERINARY SURGERY, GENERAL, OPERATIVE AND REGIONAL. J. J. O'Connor, M. R. C. V. S., Professor of Surgery at the Veterinary College of Ireland. 2nd edition, rewritten and extended. viii + 953 pages, with 495 figures. Alexander Eger, Chicago, 1931. Cloth, $9.00.

Professor O'Connor has rewritten Dollar's well-known treatise on Veterinary Surgery. In doing this an attempt has been made to abridge the work wherever possible without sacrifice of essential detail. To accomplish this, anatomical descriptions have been omitted, leaving this detail to works on anatomy. Repetitions have been eliminated, such as details of inflammatory symptoms and preparing sites for operations. References of doubtful value have been deleted.

Part I is new, consisting of six chapters on general pathology (inflammation, abscesses, gangrene, ulcers, fistula, wounds, tumors, cysts, etc.).

Part II deals with operative surgery and contains a chapter on general considerations, including restraint, anesthesia, antisepsis, instruments and dressings, operative technic, hemostasis, sutures, etc. The second chapter covers the principal major operations.

Part III is devoted to regional surgery and takes up, in a systematic way, the operations designed to correct and relieve conditions met in the different organs, cavities and regions of the body.

It is the opinion of the reviewer that the general appearance of a book of this kind could be much enhanced by the omission of quite a number of the rather crude drawings used to illustrate the text. They not only give the impression that the book is of ancient vintage, but many of these illustrations are of questionable didactic value (figs. 189, 331, 360, 408). In this day of modern equipment, of what particular value is a photograph of

Claude Bernard's operating table (fig. 55) except by way of contrast?

Wherever possible, attention has been given to surgical procedures in the dog and cat. Many veterinarians would undoubtedly like to see more information on such an operation as rumenotomy in the bovine, which is disposed of in about half a page, practically as much space is given to such a rare condition as sprain of the longissimus dorsi. Similarly, the procedure for amputating the mammary gland (cow) is described in ten lines, while twice as much space is devoted to the treatment of lameness with radio-active muds.

In spite of what might at first be considered its shortcomings, this book contains a wealth of valuable material for the general practitioner. When it is considered that there are over 900 pages of text, and few subjects are given as much as a page, one may begin to realize how much ground there is to be covered in a work of this kind. The author is to be commended for his very evident desire to present a worthwhile book and the publisher is to be praised for his confidence in the profession, evidenced by his willingness to bring out such a large book at this time.

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A Comparison of Normal Corn Silage with Grainless Corn Silage for Finishing Beef Cattle. M. Jacob and H. R. Duncan. (Bul. 144. Univ. of Tenn. Agr. Exp. Sta., Knoxville, Tenn., October, 1930.) Illustrated. pp. 22.

Studies of the Test Tube Agglutination Test for the Diagnosis of Bang's Disease (Contagious Abortion). C. P. Fitch, C. R. Donham, Lucille M. Bishop and W. L. Boyd. (Tech. Bul. 73. Univ. of Minn. Agr. Exp. Sta., Saint Paul, Minn., November, 1930.) pp. 56.

Vaccinating Fowls for Chicken Pox. W. A. James and Robert Graham. (Cir. 363. Univ. of Ill. Coll. of Agr. and Agr. Exp. Sta., Urbana, Ill., December, 1930.) Illustrated. pp. 14.

Habits and Economic Status of the Pocket Gophers. Theo. H. Scheffer. (Tech. Bul. 224. U. S. Dept. Agr., Washington, D. C., January, 1931.) Illustrated. pp. 26.

Reliability of the Tuberculin Test. John R. Mohler. (Misc. Pub. 59. U. S. Dept. Agr., Washington, D. C., issued October, 1929, revised January, 1931.) Illustrated. pp. 14.

Bang's Disease (Infectious Abortion). B. J. Killham. (Ext. Bul. 110. Mich. State Coll. of Agr. and Applied Sci., East Lansing, Mich., January, 1931.) Illustrated. pp. 22.

THERAPY OF EXPERIMENTAL TETANUS INFECTION. George E. Coleman. Jour. Inf. Dis., xlvii (1930), 5, p. 399.

As a prophylactic against tetanus or in the treatment of tetanus-infected guinea pigs without antitoxin, the subcutaneous injection of 1 per cent and 10 per cent sodium chlorid, 4 per cent dextrose, parathormone and calcium lactate, either alone or in combination, does not affect the course of the disease. Epinephrin, potassium permanganate and iodin do not affect the course of severe tetanus infection when used in wound prophylaxis and in treatment, alone or in combination with the afore-mentioned substances. An infusion of a so-called Mexican "lockjaw weed" was without effect when used as a prophylactic or therapeutically in tetanus.

THE VIRULENCE OF A PURE LINE AND SEVERAL STRAINS OF ENTAMOEBA HISTOLYTICA FOR THE LIVER OF CATS AND THE RELATION OF BACTERIA, CULTIVATION AND LIVER PASSAGE TO VIRULENCE. L. R. Cleveland and Elizabeth P. Sanders. Amer. Jour. Hyg., xii (1930), 3, p. 569.

It is possible to reproduce typical amebic abscesses of the liver readily by direct inoculation of the amebae into the liver following laparotomy. After the amebae from acute cases of dysentery had been cultivated for a year or more, most of their ability to maintain themselves in the liver and intestines had been lost. Only 16 out of 79 cats inoculated into the liver with pure-line strains of amebae developed abscesses, and only two out of 26 kittens inoculated intrarectally developed intestinal infections, while at an earlier period these same amebae were capable of producing a much higher percentage of infection. Attempts were made to regain the loss of infectivity by liver and intestinal passage. Six liver passages were made with the pure-line amebae, with the result that the infectivity increased from 20 per cent in the first passage to 73 per cent in the sixth. Liver inoculations

brought about amebic abscesses just as readily in the livers of adult cats as in kittens. The results of the intestinal passages indicated a more sudden gain in infectivity. However, the authors found that bacteria which accompany the amebae have much to do with doing sufficient damage to the liver to allow an amebic abscess to develop. Intestinal passage of strains of amebae from acute cases of dysentery, but not grown in culture, produced no increase in virulence as indicated by the percentage of animals that became infected. However, such amebae are frequently almost 100 per cent infective for kittens intrarectally. All attempts to reproduce brain abscesses in kittens, guinea pigs and rabbits failed. Eight cats inoculated into the liver via the mesenteric vein did not develop liver abscesses. No abscesses developed in any of nine monkeys, sixteen rats and seven rabbits that were inoculated into the liver.

Bartonella Canis (A New Cause of Anemia). W. Kikuth. Abst. Arch. Path., x (1930), 5, p. 806.

The author describes a new cause of anemia in dogs which belongs to the Bartonella group and is named *Bartonella canis*. The parasites are well stained only by the Giemsa stain and are coccoid and rod forms which sometimes resemble *B. bacilliformis* and sometimes *B. muris*. They pass Berkefeld N filters. In normal dogs they cause a slight infection which quickly becomes latent but can be activated by splenectomy. Splenectomized dogs infected with *B. canis* develop progressive anemia, acute or chronic, which frequently leads to death. All attempts to cultivate the parasites have been unsuccessful. Transmission of the disease by fleas also has been unsuccessful. The administration of neoarsphenamine leads quickly to a disappearance of the parasites from the peripheral blood and to complete healing of the infection.

Immunity in Dogs to Aqueous Extracts of Taenia Pisiformis. H. E. Essex, J. Markowitz and F. C. Mann. Abst. Jour. Parasitol., xvii (1930), 2, p. 107.

It has been demonstrated repeatedly that the blood pressure of anesthetized dogs that have never been infected with *Taenia pisiformis* falls precipitately when an aqueous extract of this tapeworm (8 mg. per kg. of body weight) is injected intravenously. It has likewise been repeatedly shown that the blood pressure of

dogs harboring large numbers of this parasite is unaffected by intravenous injections of even larger doses of the extract. Comparable intravenous injections are followed by severe symptoms in dogs that have never been infected, while serious symptoms are lacking when injections are made into heavily infested dogs. A heavy infestation appears to confer an immunity to the toxic action of such extracts.

Trichomonas Diversa N. Sp. and Its Association with a Disease of Turkeys. Fritz Volkmar. Jour. Parasitol., xvii (1930), 2, p. 85.

The author describes a new flagellate, *Trichmonas diversa*, of the genus Trichomonas, family Trichomonadidae and order Protomonadida. This protozoan has an affinity for the upper digestive tract of the turkey and has invariably been associated with peculiar lesions of the mucosa. The protozoan was demonstrated in 115 turkeys showing such lesions and was absent in 1700 control turkeys. No description of the pathological lesions is presented.

On the Biology of the Fourth Stage Larva of Oxyuris Equi. Rudolf Wetzel. Jour. Parasitol., xvii (1930), 2, p. 95.

The fourth-stage larvae of *Oxyuris equi* (Schrank) attach themselves to the mucous membrane by drawing a portion of the upper layers of the stratum glandulare into the cup-shaped corpus pharyngis which has adapted itself to the function of a mouth capsule for this purpose. This results in a mechanical destruction of the superficial layers of the mucosa, the cells of which, together with tissue juice, are probably the food of the larvae. The mucosa, as well as the submucosa, shows a round-cell infiltration of various degrees consisting mainly of polymorphonuclear eosinophile leucocytes.

Intradermal Tests with Haemonchus Extracts in Sheep and Goats. Norman R. Stoll and John B. Nelson. Abst. Jour. Parasitol., xvii (1930), 2, p. 116.

Sheep and goats tested intradermally with saline extracts of dried *Haemonchus contortus* show a marked reaction of the immediate type characterized by a swelling and pinking of an area 15-30 mm. in diameter or larger. Control injections with foreign protein (horse serum) and with saline are not thus positive. Most

growing animals show the reaction; no constant differences occur between animals of different parasitic histories; adult animals previously uninfected characteristically exhibit the reaction. As far as these ruminants of known individual histories test the point, skin tests appear to furnish no information of value as a supplement to or substitute for fecal diagnosis for *Haemonchus*.

THE OCCURRENCE OF SEASONAL VARIATIONS IN THE GOITER OF RABBITS PRODUCED BY FEEDING CABBAGE. Bruce Webster, David Marine and Anna Cipra. Jour. Exp. Med., liii (1931), 1, p. 81.

According to the evidence presented, cabbage maturing in the spring and summer months has little goiter-producing power. Cabbage maturing in the late autumn has much greater goiter-producing power although this shows considerable variation in different years. The evidence suggests that this seasonal variation is in part dependent upon the variable amounts of a goitrogenic factor and an antigoitrogenic factor. The existence of this latter substance seems to be established. Although climate rather than soil is the influence determining the amount and proportions of these two factors, it is not possible to correlate available meteorological data with these variations.

IMMUNITY REACTIONS OF THE DOG AGAINST HOOK WORM (ANCYLOSTOMA CANINUM) UNDER CONDITIONS OF REPEATED INFECTION. O. R. McCoy. Jour. Parasitol., xvii (1930), 2, p. 109.

A series of 18 dogs were given repeated infections with dog hookworm, *Ancylostoma caninum*, and the infections followed by means of the hemoglobin content of the blood, egg count, and the recovery of adult worms from the feces. In six cases of heavy infection the egg count rose rapidly during the first three months to a peak of several million eggs per day. The dogs became very anemic, the hemoglobin dropping as low as 25 per cent. Two dogs succumbed to the heavy burden of parasites but in four others a crisis occurred at this point and the egg count suddenly dropped to a comparatively low level, even though large doses of larvae were given. At the same time large numbers of adult worms were passed in the feces and the hemoglobin gradually rose to normal. This is interpreted as an immunity reaction on the part of the host. This immunity was not absolute because two of

the dogs were subsequently given second and third infections, which were thrown off in the same manner as the first. In cases of light infestation it was difficult to separate acquired immunity from age resistance but apparently previous infection conferred some degree of immunity. In all cases tested, worms were still present in the intestines.

FURTHER STUDIES ON THE EFFECT OF QUININ AND PLASMOCHIN ON AVIAN MALARIA. Reginald D. Manwell. Amer. Jour. Trop. Med., x (1930), 6, p. 379.

These experiments involved 154 birds, one-third of which were given quinin, one-third plasmochin, and one-third served as controls. Five strains of avian malaria were used. The authors found a varying susceptibility to these two substances. Treatment during the incubation period was more effective than when started during the acute stage. Birds which had been sterilized by the use of quinin or plasmochin were as susceptible to reinfection as if they had never been infected to begin with, or had recovered naturally. Plasmochin was uniformly superior to quinin in the treatment of malaria, but the degree of superiority differed with the species of parasite responsible for infection. Increasing the dose to the limit tolerated by the bird does not seem to add greatly to the efficacy of either of these drugs.

THE EFFECT OF TESTICULAR EXTRACTS ON FILTRABLE VIRUS. Donald C. Hoffman. Jour. Exp. Med., liii (1931), 1, p. 43.

Testicular extracts promote the pathogenic action of the viruses of herpes, vesicular stomatitis of horses, Borna disease and vaccinia. The heightening of virulence is revealed in various ways. The effects of the viruses may be accentuated; or a weak strain converted into a strong one, as in the case of the F strain of herpes virus; or the power acquired to infect resistant species or tissues, *e. g.*, rabbits and the abdominal skin of guinea pigs with acute vesicular stomatitis. The author concludes that these extracts should serve as an important agent in the study of filtrable viruses.

THE ACTION OF TESTICLE, KIDNEY, AND SPLEEN EXTRACTS ON THE INFECTIVE POWER OF BACTERIA. M. Pijoan. Jour. Exp. Med., liii (1931), 1, p. 37.

The addition of testicle extract to cultures of 20 different bacteria just prior to inoculation enhances their infectious activity

to a high degree. Kidney extracts enhances the infection of staphylococci to a less degree than testicle extracts. The nature of the enhancement is not yet known. Spleen extract never gives rise to enhancement, and often causes the lesion to be less than would ordinarily be the case.

A Study of the Toxic Properties of Tuberculo-Proteins and Polysaccharides. Florence R. Sabin, Franklin R. Miller, Charles A. Doan and Bruce K. Wiseman. Jour. Exp. Med., liii (1931), 1, p. 51.

The temperature reaction in tuberculous and normal guinea pigs and rabbits is elicited by the tuberculo-protein and probably not at all by the polysaccharides. The polysaccharides may have some killing power under certain conditions, but this is not so consistently related to dosage as in the case of the proteins. Both proteins and polysaccharides cause a change in the white blood cells when introduced by any route.

On the Bacteriology and Pathology of 500 Chicks Affected with Pullorum Disease. M. W. Emmel. Poultry Sci., x (1930), 1, p. 24.

Pullorum disease in baby chicks can usually be diagnosed on the gross lesions when two or more chicks are submitted for autopsy. The acute form of pullorum disease is an exception, however, but it has been observed that this form is more often confined to the individual chick than to a flock. Gray and brown foci, petechiae and hemorrhagic or congested areas may occur in the liver; gray foci, pneumonia and congestion are the lesions produced in the lungs; firm, nodular, gray foci may appear in the musculature of the heart. Combinations of any of the lesions of the liver and lungs may appear. Lesions of the liver, heart and lungs were associated in 32.4 per cent of the chicks; liver and lung lesions were associated in 39.6 per cent of the chicks; while liver lesions alone occurred in 15 per cent of the chicks. The causal organism was isolated from the liver of 89.2 per cent of the chicks, from the lungs of 84.2 per cent of the chicks and from the heart of 74 per cent of the 500 chicks studied. Isolation of the causal organism from the intestinal tract increased the number of pullorum-positive chicks 4.2 per cent. All of the chicks used in this study were naturally infected chicks.

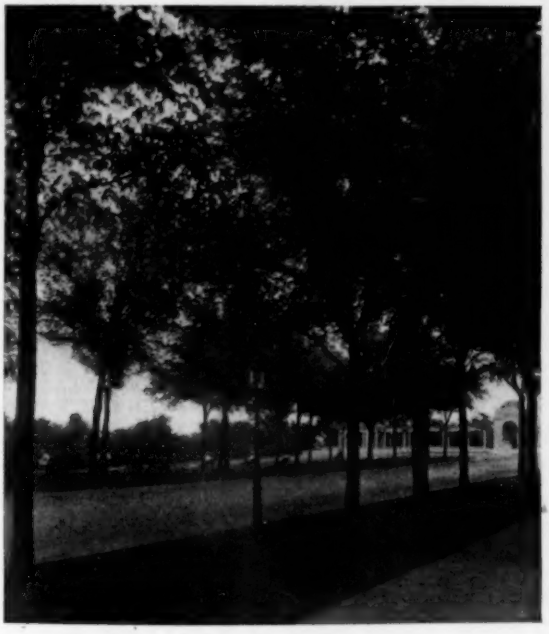
HISTOLOGICAL STUDIES OF HOG CHOLERA. I. Lesions in the central nervous system. Oskar Seifried. Jour. Exp. Med., liii (1931), 2, p. 277.

Encephalomyelitis and meningitis was found in 33 out of 39 cases of virus hog cholera which had been infected, either intramuscularly or by contact, and killed between 6 and 49 days after infection. A description is given of the changes found. In addition to the cellular changes, both microscopic and macroscopic hemorrhages are present in the brain, spinal cord, and meninges. The lesions described have been found in the central nervous system of swine infected with four different strains of hog cholera virus. Two were laboratory strains and two were obtained from fresh field outbreaks. Histological changes in the central nervous system were found as early as six days after infection and before the animal showed central nervous system symptoms. In two cases which were paralyzed no lesions in the central nervous system could be demonstrated. The lesions in the central nervous system are considered responsible for the various nervous symptoms commonly found in hog cholera.

AGGLUTINATION TESTS FOR THE DIAGNOSIS OF UNDULANT FEVER. S. Bayne-Jones. Amer. Jour. Pub. Health, xx (1930), 12, p. 1313.

A coöperative investigation of undulant fever was undertaken during 1929 by 17 laboratories in the New York State Association of Public Health Laboratories. The work was limited to the performance of the agglutination test with serums submitted to the laboratories for any purpose. An antigen composed of a suspension of killed *Br. abortus* was used and a standard procedure adopted. Reports were made on agglutination tests with serums from 3,716 patients. Of these, 64 (1.72 per cent) gave positive agglutination reactions with the *Br. abortus* antigen. While the final diagnosis in some cases had not been made, this investigation seemed to indicate that all of these were cases of undulant fever. Agglutination reactions with dilutions less than 1:100 were obtained with 93 specimens of serum. With the possible exception of two old recovered cases of undulant fever, the diagnosis of undulant fever was not made in these cases. Some degree of agglutination with the abortus antigen or melitensis antigen was obtained with 165 serums (4.44 per cent). False positive reactions were given with serums contain-

ing hemoglobin. No other known false positives occurred among many specimens from patients suffering from a great variety of diseases. Patients between the ages of 15 and 39 gave the most numerous positive reactions (53 per cent). Farming and occupations associated with farming and cattle-raising were the occupations most frequently associated with positive agglutination reactions for undulant fever in this series. The drinking of raw milk and contact with cows in herds having contagious abortion could be established in nearly every case in which a positive agglutination reaction was found. The reports, however, do not furnish information on milk-drinking habits and association with cattle of the 3,747 patients whose serum gave no agglutination with abortus antigen. Contact with swine was infrequent and unimportant according to the reports of the cases in this series. The experience of this investigation indicates that few positive reactions will be found from tests with serum submitted for serological tests for syphilis but that often decisive information will be obtained from routine tests in obscure febrile conditions, even when the clinical diagnosis has an aspect of assurance.



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CHANGES RELATIVE TO VETERINARY OFFICERS

Regular Army

1st Lt. Charles S. Greer is relieved from duty at Fort Bliss, Texas, effective at such time as will enable him to proceed to San Francisco, Calif., and sail on the transport scheduled to leave that port on or about April 9, 1931, for duty in the Hawaiian Department.

1st Lt. Ernest E. Hodgson is assigned to duty at the remount purchasing and breeding headquarters, Lexington, Ky., upon completion of his present tour of duty in the Hawaiian Department.

Captain Floyd C. Sager is relieved from assignment and duty at the Front Royal quartermaster depot, Front Royal, Va., effective June 21, 1931, and assigned to Madison Barracks, N. Y., for duty.

Veterinary Reserve Corps

New acceptances

Butler, Clair Lenna	2nd Lt.	24th St. and Ave. A,	New York, N. Y.
Gott, Charles Voris	Capt.	516 W. Walnut St.,	Portland, Ind.

Promotions

Button, Reuben Allan	To Capt.	49 Broadway,	Tacoma, Wash.
Hodgson, Harold Bishop	Capt.	130 Hall St.,	Athens, Ga.
Neary, Walter Emmert	Capt.	P. O. Box 1698,	Boise, Idaho.
Neer, Lester Cook	1st Lt.	328 Edgar Ave.,	Dayton, Ohio.

Hoskins Medal Awarded

Captain Raymond Randall, V. C., was awarded the Hoskins Medal for the year 1930-31, at the graduation exercises of the Army Veterinary School, January 30, 1931.

Published in Nine Languages

Did you recieve a copy of volume vii, number v, of the *Bloodless Phlebotomist*, published by the Denver Chemical Manufacturing Company? This edition was published in nine languages and a copy was mailed to every member of the medical and allied professions, with a known address, in every country throughout the world, one or two Slavic countries excepted. The circulation of this issue exceeded 1,300,000 copies. You may secure a copy by writing to 163 Varick Street, New York, N. Y.

MISCELLANEOUS

Old Nick, 35-Year-Old Horse, Ends Noteworthy Career in U. S. Service

"Old Nick," a black gelding, ended a noteworthy career of service in the U. S. Department of Agriculture, January 16. His death on that date culminated what is believed to be the highest record for long service by any of Uncle Sam's equine employes. Nick went to work for the Department in 1900, when five years

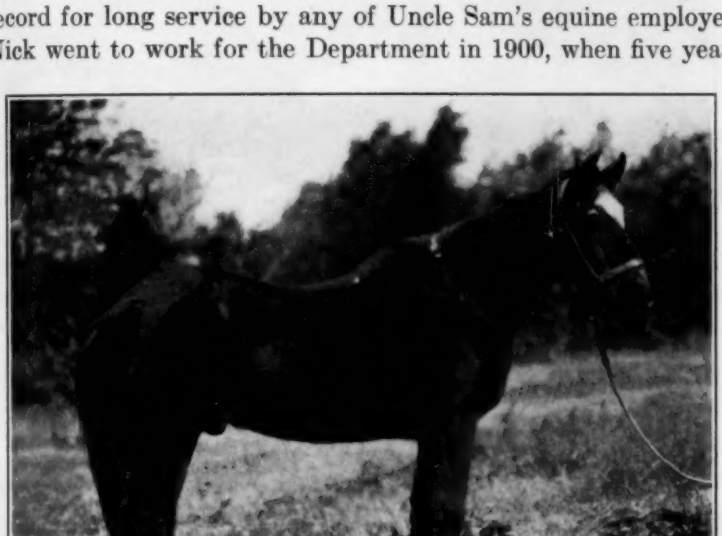


FIG 1. Old Nick, veteran equine employe of the Bureau of Animal Industry, U. S. Department of Agriculture. His death at 35 years of age establishes a noteworthy record of faithful service for Uncle Sam's 4-footed employes.

old. He was purchased in Newark, N. J., by Dr. George W. Pope, a veterinarian of the Bureau of Animal Industry, then in charge of the Bureau's quarantine station at Athenia, N. J.

The gelding's black color resulted in the name of "Nig," which in the course of time developed into "Nick." His first duties

were at the quarantine station mentioned. In 1906, he was brought to the Bureau's experiment station at Bethesda, Md., a short distance outside of the District of Columbia. For about nine years Nick made practically daily trips to the main offices of the Bureau in Washington, D. C., and return, covering twenty miles or more each day and was always ready for service. A portion of the time he traveled single to a light vehicle and the remainder in double harness to a large delivery wagon. During this period of active service his total travel is estimated to have been about 60,000 miles.

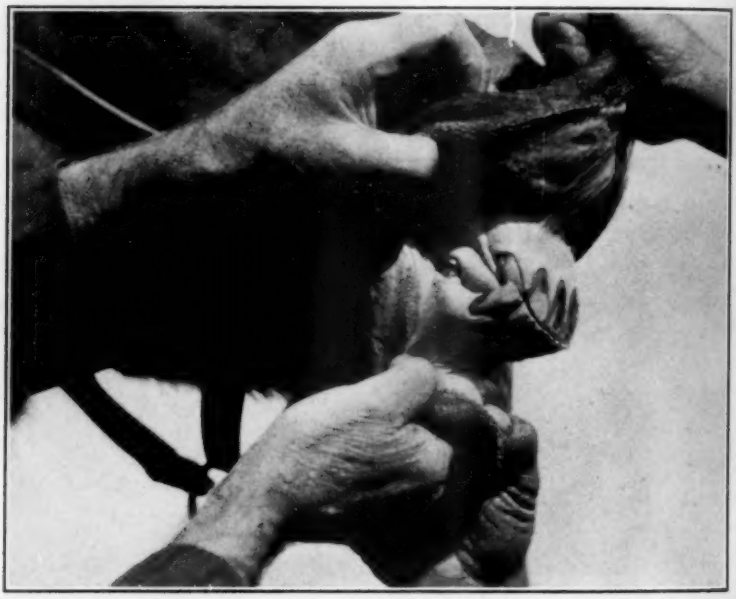


FIG. 2. Incisor teeth of the old horse, Nick, about a year before his death. Note that all are present and worn evenly.

In October, 1915, a motor truck was substituted for the horse-drawn delivery service, and Nick was put to farm work, continuing to do this until 1924. He was then used for light work about the Station, principally hauling light loads of feed, until 1927, when advancing years resulted in virtual retirement, though he was still kept at the station which he served so long and faithfully. During his active service Nick was fed principally oats and timothy hay, but more recently, in his old age, the ration consisted of bran, alfalfa meal, and a few oats.

His appetite was good until the latter portion of 1930, when it slowly failed. His eyesight and hearing were excellent up to his

death. In his prime Nick weighed about 1,250 pounds, but in his old age this weight decreased to about 975 pounds. His teeth were worn but otherwise well preserved. In late years the incisors, all of which were present, met those of the opposite jaw at a very acute angle. The canine teeth were all present but worn down almost to the surface of the gums. The molars also were all present, though in several instances a tooth in one jaw was worn below the surface of the gums by the harder one opposite it. The outer edges of at least five of the upper molars and the inside edges of several of the lower ones projected beyond the wearing surfaces, making mastication difficult, until this condition was relieved by cutting the projections away. Dr. W. E. Cotton, superintendent of the Station, considered the teeth typical of those of a very old horse with the exception that the incisors were better preserved.

By the end of 1930, Nick had been failing gradually from the infirmities of old age. On January 16, he was found "down" from weakness and was in such condition that he was humanely put to death to prevent unnecessary suffering. In spite of his many years of service Nick was rarely sick or indisposed. In fact, he always seemed so well that he received very little attention from any one aside from the men who drove and cared for him. Harry Myers, an employe of the Experiment Station, was his special friend and pal. Nick wore out at least two other horses which worked with him, not because he did not pull his share of the load but because he was of tougher fiber.

At the time of the old gelding's death his age was comparable to about 90 years of age for man. On a comparable basis, his period of service would be equivalent to about 72 years of human endeavor, were this possible under Government appointment and retirement regulations. This figure sets a record likely to stand for many years.

Thus has ended the life of a faithful animal, which for many years rendered efficient service and abundantly earned the few years of rest given him at the end of his life. The Department of Agriculture's *Official Record* paid tribute to old Nick, in its issue of September 11, 1930, as being worthy of his well-earned retirement and good care in his old age.

It is reported that a Wisconsin judge had decreed that if a motor vehicle and a cow meet on the road, in the Badger State, the cow has the right of way.

Create Foundation for Study of Dog's Care

Creation of the Chappel Kennel Foundation, with the object of advancing the welfare of "man's best friend," through better breeding, better feeding and the more humane care of dogs, was announced by Mr. P. M. Chappel, of Rockford, Ill., March 10, just before departing for New York City, to board the SS "Leviathan" for a two-month tour of Europe.

Mr. Chappel and his brothers E. J. and E. E., all three long prominent in dog and sport circles, propose to carry on their future dog philanthropies through the medium of the Foundation.

Although the dog population in the United States has increased tremendously in the last decade, Mr. Chappel stated, the increase in popular knowledge concerning the dog and his habits has not been nearly so great. The Foundation will not only seek to encourage dog-ownership and teach proper care of the dog but will also strive to raise the level of dog standards. Research projects in canine genetics and nutrition will be carried on in cooperation with established agencies, as well as work with veterinarians, dog organizations, humane societies, and the like, to improve dog conditions generally and to reduce illness and death losses. Facts will be passed on to dog-owners as developed.

Mr. Chappel indicated that one of the early projects would be a study of the problem of keeping dogs in city apartments. This study will attempt to uncover not only the actual conditions under which dogs are kept in apartments but also to evolve facts that will enable the city dweller to keep his dog with a minimum of effort and a maximum of happiness for the animal.

L. J. Brosemer, formerly junior animal husbandsman of the U. S. Department of Agriculture and nationally known as a breeder and fancier, has been placed in charge of the activities of the Foundation, which will have its headquarters in Rockford.

The dog, Mr. Chappel pointed out, was the first animal domesticated by man, and is the only animal that has been his faithful servant in every clime. It is estimated that there are now in the United States over eight million dogs, or one to every four families. While practically all other animals are declining in numbers, the dog population is gaining steadily, a fact probably explained by man's realization that the dog is the last link binding him to nature.

Dalrymple Memorial Building Dedicated

Tributes to the life and work of Dr. W. H. Dalrymple, for 36 years connected with the Louisiana State University, were voiced at the dedication program of the Dalrymple Memorial Building, on the new university campus, at Baton Rouge, on February 19, 1931. Members of the Louisiana State Veterinary Medical Association, together with the University faculty and citizens of Baton Rouge, witnessed the dedication of the first memorial building to a member of the teaching staff in the history of the institution.

The dedicatory address by Col. A. T. Prescott, dean of the College of Arts and Sciences, who was associated with Dr. Dal-

Dalrymple Memorial Building at Louisiana State University

rymple for many years, featured the program, which was presided over by Prof. Thomas W. Atkinson, retired president of Louisiana State University. Presentation of the building was made by Mr. George C. Everett, vice-president of the Board of Supervisors of the University. Dr. James M. Smith, president of L. S. U., accepted the structure on behalf of the University. The invocation and benediction were said by Rev. J. S. Ditchburn.

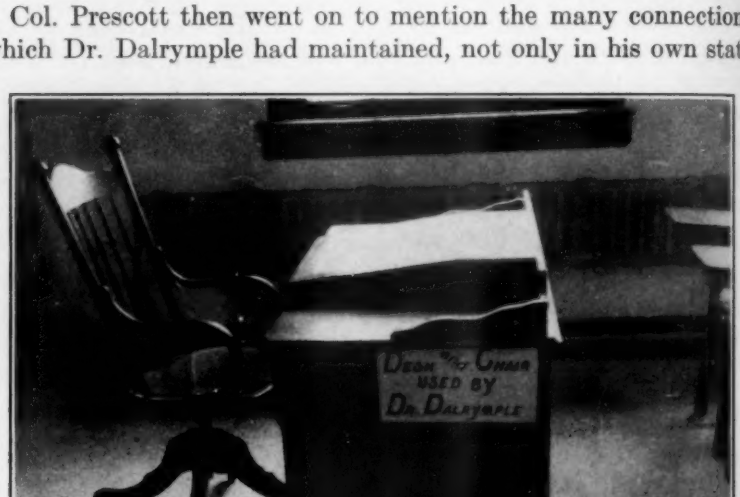
The ceremony took place in front of the new building, with rows of chairs ranged about a small raised platform on which those participating in the program proper were seated. Mrs. W. H.

Dalrymple, widow of the late Dr. Dalrymple, and her daughter, Mrs. Eleanor Dalrymple Fauver, were on the platform.

Col. Prescott, in his dedicatory address, paid the following tribute to Dr. Dalrymple:

> Here we are honoring a man whose influence carried not only through this state and adjoining ones, but whose name had been engraved on national and international rolls of honor. Here is a man who brought honor to the institution. The significance of that should be stressed on this occasion. His influence will live after him and will influence the lives of men, even after we are gone. Dr. Dalrymple was loyal to his profession, and strove in every way to make it more useful to a larger number of people.

Col. Prescott then went on to mention the many connections which Dr. Dalrymple had maintained, not only in his own state



The desk and chair used by Dr. Dalrymple have been given a place in the new building

but elsewhere. He stressed the remarkable energy of the man, his varied writings, including both books and pamphlets, besides his contributions as agricultural editor of the old *Picayune*. He paid tribute to Dr. Dalrymple's personality, his high ethical standards and his capacity for work.

Mr. Everett, in presenting the building, said that our universities should do more research work. He paid tribute to the work which had already been done in animal diseases by L. S. U. and declared that the study of the prevention and cure of animal diseases was second only to that of human diseases.

A letter from Dr. H. A. Morgan, who for many years worked with Dr. Dalrymple and who now is president of the University of Tennessee, was read by President Atkinson. Dr. Morgan expressed a personal note of appreciation for the ceremony honoring the man whom he had known as a co-worker.

In accepting the new building, Dr. Smith paid a tribute to four great characteristics of Dr. Dalrymple. He said:

> First, there was great scholarship, he knew his subjects; second, he was a great teacher, he could present his subject effectively; third, he possessed a sense of high professional ethics; and fourth, he had a great personality. He must have led a life that was inspiring to all who came in contact with him. I am very happy indeed to accept this building as a memorial to a great scholar, a great teacher and a great man.

In the entrance hall of the main structure hangs a bronze tablet with the following inscription:

> THESE PATHOLOGICAL LABORATORIES COMMEMORATE THE LIFE OF WILLIAM HADDOCK DALRYMPLE, BORN IN STRANRAER, WIGSTOWNSHIRE, SCOTLAND, APRIL 23, 1856, AND DIED AT BATON ROUGE, LOUISIANA, JULY 17, 1925. FOUNDER OF VETERINARY SANITATION IN LOUISIANA, PRESIDENT OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, EDITOR OF THE JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, PROFESSOR OF VETERINARY MEDICINE AT THE LOUISIANA STATE UNIVERSITY FOR 32 YEARS, DEAN OF THE COLLEGE OF AGRICULTURE AND DIRECTOR OF ITS EXPERIMENT STATIONS.
>
> WELL DONE THOU GOOD AND FAITHFUL SERVANT.

Educational Exhibit at Detroit Dog Show

The veterinarians of Detroit and vicinity recently launched what is believed to be a brand new idea, in connection with the Dog Show held in the motor city, March 6-8, 1931. The Detroit Kennel Club requested the Southeastern Michigan Veterinary Medical Association to appoint a committee of veterinarians to inspect all dogs entered in the recent show. The Detroit veterinarians indicated a willingness to perform this service and in return imposed just one condition, and that was that the management of the Dog Show grant no concessions to manufacturers of patent remedies for dogs. The officers of the Detroit Kennel Club readily saw the point and agreed to exclude from the show all exhibits of patent medicines.

The Southeastern Michigan Veterinary Medical Association then asked for permission to put on an educational exhibit during the show, and this request was very willingly granted. With the assistance of veterinarians connected with the Michigan State College, the U. S. Bureau of Animal Industry and the Detroit Department of Health, an educational exhibit was placed on display in a booth constructed for the purpose. The exhibit consisted largely of pathological specimens of various conditions found in dogs. Parasites and parasitic diseases were given a prominent place. The booth had a very choice location and the attendance during the three days of the Show was estimated at 10,000. Upwards of 800 dogs were benched, indicating that the Detroit Dog Show is among the largest held in the United States, each year.

Booth of the Southeastern Michigan Veterinary Medical Association at the Detroit Dog Show, March 6-7-8, 1931

The officers of the Detroit Kennel Club expressed themselves as being very highly satisfied with the inspection, as it was conducted this year, and also indicated their hearty approval of the educational exhibit, considering it to be one of the features of the Show. Every person visiting the booth was given a four-page folder listing the names of the 21 veterinary practitioners who participated. This folder also contained a very brief article, entitled "Correct Diagnosis First," which emphasized the importance of a proper diagnosis before attempting treatment of a sick animal. The accompanying illustration shows the general appearance and arrangement of the booth. Veterinarians in other cities who would be interested in similar projects may obtain copies of the folder, as well as additional information, by communicating with the secretary of the A. V. M. A.

Tuberculosis Eradication Makes Steady Progress

Tuberculin-testing of cattle gained an impetus at the beginning of the new year, as disclosed by figures just announced by the U. S. Department of Agriculture. The total number of cattle tested during January was 1,173,467, which is materially larger than the average of monthly tests last year and exceeds by 220,958 the number of cattle tested in January, 1930. The situation reflects an increasing interest in the eradication work on the part of live stock owners and coöperating officials.

Work throughout the country was intensive. Wisconsin, Iowa, Illinois and Pennsylvania made especially notable contributions to the progress of the campaign. In each of these states the number of cattle tested exceeded 100,000. The number of so-called "modified accredited counties," signifying practical freedom from bovine tuberculosis, increased by 27 during January, making a total of 1123, which is materially more than one-third of the counties of the country. At the end of the month the number of cattle still on the waiting list exceeded 2,415,000.

Anaplasmosis Described in New Publication

Anaplasmosis is now present in many cattle-raising regions of the United States. Probably it was introduced by carriers from tropical countries. This disease, which resembles and may be confused with tick fever in the tick-quarantine areas, also resembles anthrax, hemorrhagic septicemia, and other less serious disorders. It is fully described in Circular 154-C, just issued by the U. S. Department of Agriculture.

The malady, which is a comparatively new disease in this country, is an acute, subacute or chronic, febrile, infectious protozoan disease, and is characterized by sudden loss of flesh and suppression of the milk flow. Affected animals soon become anemic and run high temperatures but usually have normal appetites. A marked weakness and stiff gait may develop as the disease progresses and affected animals are inclined to lie down frequently. The complete suppression of the milk flow in dairy cows usually follows, and shortly before death the temperature may drop to about normal or below. The respiration and pulse may be rapid and death may occur in from two days to a week or more after the first symptoms were noticeable.

Anaplasmosis may be distinguished from tick fever by the lack of bloody urine which usually accompanies tick fever. A micro-

scopic study of the blood of animals affected with anaplasmosis shows indications of severe anemia with the causative parasites appearing as small globular bodies in the red blood cells, usually situated near their borders.

The occurrence of anaplasmosis in a herd may result in losses ranging as high as 40 per cent of the animals affected and those that recover may be stunted and be in poor condition for a long time. The microparasite which causes the disease can be transmitted from sick to healthy cattle by means of certain ticks and by veterinary instruments. Although treatment for the disease is still in the experimental stage and largely a veterinary problem, the owner may assist the recovery of affected animals by giving extra care and by avoiding unnecessary driving or rough handling.

As the disease often follows dehorning, the bulletin emphasizes the need for careful cleansing of dehorning tools before each operation and the observance of other surgical precautions in regions where the disease is known to exist. Copies of Circular 154-C, Anaplasmosis in Cattle, may be obtained by applying to the Office of Information, U. S. Department of Agriculture, Washington, D. C.

Keeping Them in the Collar

For years we have heard that horses are decreasing in number, that work animals are being replaced by tractors and electric motors, and that the side-drive milk delivery wagon is even replacing the horses of city dairies. Being skeptical, a midwest concern manufacturing horse and mule feeds sent a photographer to find out—to get pictures as positive proof.

The findings of this twentieth century Saul make an interesting story. He proved that horses and mules are still important in agriculture, mining, road-building, lumbering and big-city delivery. Many businesses still rank animal labor high in performing hundreds of jobs, many of which were thought to be monopolized by machinery. The electric motor does not move all the coal and ores from the earth's bowels. It would appear that equine practice still has an important place in most parts of the country.

These pictures have been gathered into an interesting, newsy, pictorial booklet, "Keeping Them in the Collar," printed in rotogravure, which may be had for the asking by writing to Purina Mills, Checkerboard Square, St. Louis, Mo.

New Building for the Wellcome Foundation

The Wellcome Foundation Ltd., of London, England, is about to erect a new medical and chemical research building on the site now partly occupied by their Bureau of Scientific Research. During many years the Foundation has maintained medical and chemical research laboratories, but recent developments have made it necessary to coördinate and extend these activities. The new building will furnish the additional accommodations required, and will be provided with the most modern research equipment.

Iowa Farmers Oppose Tuberculin Test

Two hundred farmers assembled at Tipton, Iowa, March 6, for the purpose of preventing veterinarians from applying the tuberculin test to their cattle. On March 20, a crowd of 1500 farmers assembled at Des Moines and denounced compulsory tuberculin testing at a hearing granted by the legislature. A special train carried 500 objectors from eastern Iowa.

BUREAU TRANSFERS

Dr. W. F. Moore (Cin. '13) from Chicago, Ill., to Cincinnati, Ohio, on meat inspection.

Dr. Edward Lapple (Cin. '11) from Fostoria, Ohio, to Sioux City, Iowa, on virus-serum control.

Dr. H. Tornow (K. C. V. C. '09) from Zionsville, Ind., to Wichita, Kans., on virus-serum control.

Dr. R. B. Ferro (K. C. V. C. '09) from Port Gibson, Miss., to Buffalo, N. Y., on meat inspection.

Dr. L. R. Sullivan (A. P. I. '23) from Canfield, Ohio, to Cortland, N. Y., on tuberculosis eradication.

Dr. S. H. Exley (Ga. '24) from New York, N. Y., to Atlanta, Ga., on meat inspection.

Dr. E. S. Dickey (K. C. V. C. '06) from Sioux City, Iowa, to Ottumwa, Iowa, on meat inspection.

Dr. Robert Thurman (Cin. '12) from Zionsville, Ind., to Fostoria, Ohio, on virus-serum control.

Dr. W. E. Neary (Colo. '21) from Boise, Idaho, to Nampa, Idaho, on meat inspection.

Dr. Zeno C. Boyd (K. C. V. C. '07) from Galesburg, Ill., to San Antonio, Texas, on meat inspection.

Dr. Guy M. Parish (A. P. I. '15) from Newark, New Jersey, to Cincinnati, Ohio, on meat inspection.

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Dr. James M. Wingate (A. P. I. '28) from Woodville, Miss., to Newark, N. J., on tuberculosis eradication.

Dr. Joseph Hannon (McK. '10) from Alton, Ill., to Albia, Iowa, on meat inspection.

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1930-1931

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NEW ENGLAND VETERINARY MEDICAL ASSOCIATION

A two-day conference of New England veterinarians was held in Boston, Mass., November 24-25, 1930. About 200 were in attendance and an excellent program was carried out.

In a paper on "Common Diseases of Poultry," Dr. Glen L. Dunlap, of the Massachusetts Agricultural College, stressed the need of New England veterinarians interesting themselves in the control of poultry diseases. He stated that the county agent is called in when trouble exists, as many poultry-owners feel that he is better informed and more interested than the veterinarian. Dr. Dunlap suggested that veterinarians write popular articles on poultry diseases for their local papers. He pointed out that although some infectious diseases of poultry exist in New England, parasitic conditions are probably of more importance, particularly coccidiosis. It is in such conditions as this that the veterinarian can be of the most service by giving advice on sanitation, which is the most satisfactory method of control.

Dr. T. E. Robinson, of Providence, Rhode Island, described the methods of controlling rabies which have been in force in his state during the past year. A state-wide quarantine has been enforced and the regulations require that all dogs bitten by a known positive case must be destroyed, unless such dogs have been perviously vaccinated by a licensed veterinarian. Many dogs in Rhode Island have been vaccinated and Dr. Robinson felt that there was no room for doubt as to the benefits resulting from vaccination.

Under the subject, "Diseases of the Udder," Dr. John Thomas, of Wells River, Vermont, discussed various forms of mastitis. He stated that in Vermont the laboratories showed micrococci in 75 per cent of the cases, streptococci in 25 per cent, together with *B. coli* and *B. abortus*. Dr. Thomas stressed the necessity of sanitary measures and discussed various lines of treatment.

His talk was a very practical one, with a great deal of helpful material gathered from many years of experience.

Dr. Maurice C. Hall, in his usual interesting, practical and very instructive manner, gave a synopsis of the parasites found in the domesticated and semi-domesticated animals, and outlined treatments which have proven most satisfactory. He pointed out the importance of parasitic infestations and stated that the successful veterinarian of the future will have to be much more of a parasitologist than in the past. Dr. Hall stated that the veterinarian is better equipped to cope with the control of parasitic diseases than the physician, and he should be looked upon more and more as an authority in his branch of medical science.

Dr. Hugh F. Dailey, of Boston, Mass., discussed the therapeutic value of parathyroid extract in controlling calcium metabolism, stimulating growth of bone, and as a detoxicating agent. He reported excellent results in rachitis, in fractures where union is slow, and in osteomalacia of monkeys, and brought out its value in canine distemper. In this disease it has a marked control over the toxic symptoms and, when administered early in cases which develop paresis or mild chorea, it gives surprisingly good results, often bringing about complete recovery within a week. Dr. Dailey recommended, for most cases, one-tenth grain three times daily, or, in severe cases, every three hours.

The afternoon session, the first day, consisted of a clinic at which operations, demonstrations and talks constituted the program. Those taking part included Drs. W. F. Guard, of Ohio State University; Wm. J. Lentz, of the University of Pennsylvania; E. F. Schroeder and H. F. Dailey, of Boston.

In the evening there was a banquet, followed by a dance, with about 200 present. Dr. A. T. Gilyard, of Waterbury, Conn., acted as toastmaster. Dr. L. H. Adams, of Montpelier, Vt., gave a toast to "Our Country." Dr. R. W. Smith, of Laconia, New Hampshire, proposed a toast to the ladies, and being in his usual witty frame of mind sprung a few good (?) stories. Dr. P. R. Baird, of Waterville, Maine, in proposing a toast to "The Profession," cited the trend of present-day veterinary medicine, presented figures on the number of veterinarians in the United States and predicted a wider scope and a bigger and better recognized veterinary profession of the immediate future.

The toastmaster next introduced the presidents of the six veterinary medical associations of New England. Then, two of the headline speakers of the conference were introduced:

Drs. W. F. Guard and Wm. J. Lentz. The next introduction made by the toastmaster, in a very fitting manner, was that of Dr. Maurice C. Hall, and the latter received an ovation befitting the man, his scientific attainments and the high office which he holds as president of the A. V. M. A. Dr. Hall certainly did credit to himself, the A. V. M. A. and the veterinary profession. His theme was "The Veterinary Profession of Today and the Future," and, as the saying expresses it, "you could have heard a pin drop" during the half-hour or more which he talked. His comparison of the veterinary profession of today with other learned professions certainly made every veterinarian, and every veterinarian's wife present, feel considerably better satisfied with their chosen lot in life and gave them a feeling of determination to go on with things in a spirit of equality, achievement and professional standing which at least some members of the profession in New England needed to have instilled into them. Doubtless, however, this is not peculiar to New England.

The second day of the conference was opened with an address by Dr. W. F. Guard, whose subject was "Diseases of the Alimentary Tract in Cattle." This address was illustrated with lantern-slides and covered many conditions of interest and practical importance.

In discussing choke, Dr. Guard referred to cases of cervical choke in which the probang and stomach-tube failed to relieve the condition, but which could he handled by means of a trocar and canula forcing the object up into the mouth. He described in detail his method of gastric lavage in cases where medication fails and considerable intoxication exists. When a solid, dry mass is present, rumenotomy is necessary. The operation was performed by Dr. Guard at the clinic in the afternoon.

Various other operations and treatments of value to those engaged in cattle practice were described in such a clear-cut practical manner that those whose privilege it was to hear Dr. Guard received a great deal of benefit to be applied in every-day practice. Incidentally, it may be said that Dr. Guard made an impression at the meetings and in the clinics, which made everybody feel that in his capacity of Professor of Surgery, at Ohio State University, great things could be expected along advances in surgical procedure.

Dr. B. S. Killian, of Somerville, Mass., justly enjoys a wide reputation as an experienced, "clever," performer of cesarean section. He described in detail his method of operating and

pointed out many of the pitfalls and practical points of assistance to those called upon less frequently to perform this operation.

Dr. P. R. Baird, of Waterville, Maine, presented a paper, entitled, "Cattle Diseases Transmitted to Man via Milk." The subject was treated in a manner reflecting great credit on the veterinary profession, and the important relation of veterinary medicine to public health. It is hoped that this paper will find its way into many medical and public health journals.

Dr. William J. Lentz, of the University of Pennsylvania, was on the program for "Observations in Small-Animal Practice." As several veterinarians remarked, "Bill Lentz is always good and I wouldn't miss him on a bet." Well, he lived up to his high reputation in grand style, notwithstanding the fact that he was not feeling fit. A natural born teacher, he gave a valuable postgraduate course in small-animal practice, condensed in his address at the meetings and at the clinics, which was invaluable to the many small-animal practitioners present. Distemper, running fits, diet, coccidiosis in dogs, colitis in cats, and many other conditions were discussed by Dr. Lentz in a manner which gave much practical information to those present.

The concluding paper on the program was presented by Dr. J. J. Kavanek, Deputy Commissioner on Domestic Animals, Hartford, Conn. His subject was "Irregularities in the Diagnosis and Control of Bang's Abortion Disease." Dr. Kavanek certainly cut loose on this all-important subject which, to the open-minded, furnished much food for thought. The fact that he had statistics, with which to back up his statements, made his paper all the more impressive. Dr. Kavanek referred to experiments conducted in Connecticut which consisted of submitting blood samples for the agglutination test for Bang's abortion disease to four different laboratories of repute. He gave a compilation of the somewhat ridiculous variation in the results reported. While some of this was the result of the present chaotic status of what dilution constitutes a reactor, a suspicious animal and a negative one, the variation in results indicated that the control of abortion by means of a test which so-called authorities throughout the country differ so widely upon is at present not a safe or advisable procedure for the average herd-owner to depend upon. Dr. Kavanek pointed out the great advantage of using abortion vaccine in badly infected and commercial dairy herds, stating that a properly prepared vaccine would control the act of abortion and, according to his extensive records, would not make per-

manent reactors or spreaders. He felt that much of the agitation against vaccination was theoretical and not in keeping with actual field results.

The conference then went into a business session, for the purpose of discussing the formation of a permanent organization. It was unanimously voted to form a New England Veterinary Medical Association to be made up of the six state associations in New England. Officers were elected as follows: President, Dr. A. S. Cleaves, Gardner, Mass.; vice-presidents and executive board, Dr. M. R. Powers, Norwich, Conn.; Dr. W. B. Mowers, Lebanon, N. H.; Dr. J. S. Barber, Central Falls, R. I.; Dr. W. C. Pulsifer, Woodstock, Vt.; Dr. W. J. Hennessey, Worcester, Mass.; and Dr. P. R. Baird, Waterville, Maine. The membership of the new association will be about 375.

Tuesday afternoon another clinic was held. Dr. W. M. Simpson, of Malden, Mass., operated on a roarer; Dr. W. F. Guard demonstrated rumenotomy and other operations on the cow, while Dr. Wm. J. Lentz and Dr. Chas. Delano performed operations on small animals.

HARRY W. JAKEMAN, *Secretary-Treasurer.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

The regular monthly meeting of the Veterinary Medical Association of New York City was held on Wednesday evening, December 3, 1930, at the Academy of Medicine Building, New York City.

Dr. C. V. Noback, of the Bronx Zoölogical Gardens, was the speaker of the evening. Dr. Noback, who spent three years practicing in Columbia, South America, told of some of his experiences while there. The diseases of animals were similar to those encountered in the Northern Hemisphere: anthrax, blackleg, tick-fever, tuberculosis and diseases of the tropics due to piroplasma. Owing to the poor means of transportation throughout the country, it was difficult to control and quarantine infected areas, and many animals died before diagnosis and treatment could be of help. Small-animal practice was practically negligible. A rising vote of thanks was extended to Dr. Noback for his interesting talk.

The Secretary presented his accounts, showing a balance for the year of $284.94; his books being audited by Drs. Rohrer, Goodman and Crawford and found correct.

The election of officers followed, Dr. O. E. McKim being unanimously elected president. Dr. Roy H. Spaulding was elected vice-president and Dr. John E. Crawford was reëlected secretary and treasurer. The following were elected to the Board of Censors: Dr. Harry Ticehurst, Chairman, Dr. Edward A. Durner, Dr. S. Crawford, Dr. L. W. Goodman and Dr. Jacob Lebish.

Dr. McKim then took the chair and, after thanking the Association for the honor they had conferred upon him, suggested that in the future the meetings be opened at 8:30, and begged the members to try to get to the meetings on time.

It was suggested by the President that a dinner be held on the date of the next meeting and the members of the New Jersey, Long Island, Connecticut and Hudson Valley associations be invited to attend. Dr. McKim offered the use of the Army and Navy Club for the dinner, and the Secretary was instructed to take the necessary steps to invite the members of the above associations.

February Meeting

The regular monthly meeting of the Association was held on Wednesday evening, February 4, 1931, at 8:30, at the Academy of Medicine Building, New York City.

Dr. O. E. McKim, President, called the meeting to order and introduced Dr. H. E. Bemis, dean of the Veterinary School of the University of Pennsylvania, who spoke on the advisability of raising the requirements in the practice of veterinary medicine.

Dr. Bemis, in his address, first gave a brief résumé of the early history of veterinary education in Europe and this country, and described the European veterinary colleges as he saw them on a recent visit. On the whole, he declared that the colleges were in excellent condition and their faculties especially were composed of men of the highest standing.

Touching upon raising the requirements, Dr. Bemis said the limited enrollment of students checked any idea of this. He pointed out that we were not turning out enough graduates to replace the losses in the profession. He showed that most of the practitioners were over 40 years of age and our present rate of graduating veterinarians adds only about 150 a year; that 74 per cent of the students come from states in which veterinary colleges are located and that 67 per cent of the graduates locate in these states, thus creating a surplus in some states and a need

of veterinarians in others. Dr. Bemis favored the raising of requirements, but thought that more study would have to be made of the situation. At the close of his talk, a rising vote of thanks was extended to Dr. Bemis. Discussion of the paper followed, in which nearly every side of the profession, Bureau workers, laboratory men and practitioners, took part and all were in favor of raising the requirements, but like Dr. Bemis, said we must feel our way cautiously.

Election of nine members to the Association followed.

Dr. L. W. Goodman reported a case of coccidiosis in a dog. Dr. Joseph B. Engle reported a strange case of a dog which would eat nothing but oats. Dr. M. L. Morris reported a case of pancreatitis in dog.

JOHN E. CRAWFORD, *Secretary-Treasurer.*

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION

Tne annual meeting of the Maryland State Veterinary Medical Association was held at Medical Hall, Baltimore, January 15, 1931, with about seventy members in attendance. The meeting was called to order by the President, Dr. Hulbert Young, of Baltimore. In his presidential address, Dr. Young paid tribute to the Executive Committee for the excellent program that had been prepared for the meeting. He spoke briefly of the value of municipal meat inspection as a supplement to the efficient federal service. He also stressed the importance of the purity of biological products used by the veterinary profession, and then briefly referred to the progress being made in the control of bovine tuberculosis and Bang's disease. In closing, Dr. Young made the following comment on poultry problems:

> May I suggest that thought be given to the study of poultry problems both for their own sake and for their possible relationship to the eradication of tuberculosis. From an economic standpoint, the 300-egg hen is no mean producer of digestible nutrients, and pound for pound of body weight, compares favorably with the 15,000-pound producing cow. This study and others that you doubtless have in mind must wait until a more favorable opportunity at our future gatherings.

Dr. William Brenner, Chief, Bureau of Meat Inspection, City Health Department, Baltimore, presented a paper, entitled, "Municipal Inspection and Its Importance to Public Health."

Dr. J. G. Hardenbergh, Director of Laboratories, Walker-Gordon Laboratory Company, Plainsboro, New Jersey, presented a paper, entitled "Experiences in the Control of Bang Disease,"

which was most interesting. Dr. Hardenbergh cited observations made in a large dairy herd in which control of the disease was undertaken three years ago.

The next paper was entitled, "Undulant Fever in Man," and was presented by Dr. H. E. Hasseltine, Senior Surgeon, United States Public Health Service, Washington, D. C.

The fifth and last paper on the program was given by Dr. H. E. Moskey, Food and Drug Administration, U. S. Department of Agriculture, Washington, D. C., and was entitled, "The Enforcement of the Federal Food and Drug Act and the Insecticide Act."

At the business meeting it was voted to introduce a bill in the legislature designed to improve certain sections of the present Veterinary Practice Act. A resolution was adopted authorizing the incorporation of the Association. Six new members were added to the roster.

Officers for the ensuing year were elected as follows: President, Dr. Hulbert Young, Baltimore; vice-president, Dr. W. E. Campbell, Bel Air; secretary-treasurer, Dr. E. M. Pickens, College Park. Member of the Executive Committee for a term of five years, Dr. C. M. Grubb, Rockville.

E. M. PICKENS, *Secretary.*

MINNESOTA STATE VETERINARY MEDICAL SOCIETY

The thirty-fourth annual meeting of the Minnesota State Veterinary Medical Society was held in the Spanish Room of the Hotel Lowry, Saint Paul, January 15-16, 1931. The accommodations for the meeting were very excellent. The Lowry Hotel has been much expanded during the past year, and the facilities for meeting purposes are fine. This was one of the largest winter meetings that the Society has had for many years. More than 200 veterinarians were in attendance.

The first in order of business was the President's address, by Dr. J. X. Parent, of Foley. He made a recommendation that the Society look into the feasibility of employing a full-time secretary. This matter was thoroughly discussed, and a committee was appointed which reported the following day. This committee indicated that sufficient time was not available to make a definite report in regard to the practicability of this project at this meeting, and recommended that a larger committee be appointed by the incoming president, to discuss thoroughly and determine the feasibility of employing a full-time secretary for the Minne-

sota State Veterinary Medical Society. The committee is to report at the summer meeting.

Professor C. H. Eckles, of the Dairy Department of the University of Minnesota, presented a fine discussion on "The Present Status of Mineral Feeding in Cattle." He pointed out that soil in certain sections in Minnesota is very deficient in phosphorus, and that this causes a serious condition in the animals that are fed the grains and roughages from these particular sections.

Dr. E. R. Steel, of Kansas City, gave an illustrated talk on "The Hospitalization of Small Animals," demonstrating his remarks with lantern-slides of his own hospital.

A banquet was served in the Grand Ball Room in the evening, and over 125 were in attendance. Entertainment was furnished throughout. Dr. H. D. Bergman, of Iowa State College, spoke on the work of the Committee on Proprietary Pharmaceuticals of the American Veterinary Medical Association. Dr. L. A. Merillat, of Chicago, discussed "The Horse Situation of the First Army of the American Expeditionary Forces." A general good time was had by all.

On Friday morning, Dr. J. P. Foster, of Minneapolis, gave a talk on "The Regulations Governing Milk Production for the City of Minneapolis." followed by Dr. A. T. Kinsley, of Kansas City, who discussed "Important Diseases Affecting Swine." Dr. W. L. Boyd, of University Farm, gave a paper on his experience with the use of calcium in milk fever, or hypocalcemia, of cattle. Dr. L. A. Merillat discussed equine practice at present, with especial reference to medical and surgical work.

In the afternoon, Dr. H. D. Bergman presented "The Newer Aspects of Veterinary Therapeutics," and Dr. C. E. Cotton gave a summary of the work in the control of Bang's disease in Minnesota. Mr. J. H. Peschges, of Saint Mary's College, at Winona, a breeder of Holstein cattle, spoke of his experience in the control of Bang's disease in his herd. He stated that the herd had now been free of Bang's disease for some time and that the results were highly satisfactory, based on the application of the blood test. The final paper was by Drs. C. F. Schlotthauer and H. E. Essex, of the Mayo Foundation, Rochester, on "The Control of Entero-Hepatitis in Turkeys."

The Society voted to appropriate a sum of at least $250.00 for defraying the expenses of a foreign veterinarian to the Inter-

national Veterinary Congress to be held in the United States in 1934.

The officers elected were Dr. J. N. Campbell, Truman, president; Dr. A. C. Spannaus, Waconia, first vice-president; Dr. P. H. Radford, Slayton, second vice-president; Dr. C. O. Eliason, Benson, member of the Board of Trustees; and Dr. C. P. Fitch, University Farm, secretary-treasurer.

Resolutions of respect were passed for four members of the Society who died during the year.

C. P. Fitch, *Secretary.*

OKLAHOMA VETERINARY MEDICAL ASSOCIATION

The 16th annual meeting of the Oklahoma Veterinary Medical Association was held in the Skirvin Hotel, Oklahoma City, January 19-20, 1931. This meeting, which is probably unique in the annals of veterinary meetings, in that it was devoted principally to public-health problems and the part that the veterinary profession is now playing, or is destined to play, in public-health work in the future was, nevertheless, successful far beyond the expectation of those responsible for the conception of the idea.

The program, which consisted of papers and discussions of nearly every phase of public health and sanitary work with which the veterinarian is likely to come in contact, was in the hands of men who have specialized in this line of endeavor for many years and have made a decided success in their chosen field.

Dr. J. H. Epperson, Superintendent of Public Health, Durham, North Carolina, chose for his subjects "The Opportunity for Service in the Field of Public Health and the Essential Qualifications of Those Who Choose to Serve," and "Milk Inspection from the Standpoint of the Health Office." In these two papers, Dr. Epperson covered the entire field of municipal and rural sanitary service and showed, conclusively, that there is a definite place for a veterinary sanitary officer on the personnel of every well-regulated, municipal and rural, public-health unit.

Other speakers who discussed related subjects were Dr. W. H. Miles, Superintendent of Public Health, Oklahoma City; Dr. Harry McGuide, who holds a like position in Tulsa; Colonel Burt English, U. S. Army, who spoke on "Safeguarding the Army's Food Supply," and Dr. E. F. Cary, who read an excellent paper on "Federal and Municipal Meat Inspection." Dr. J. H. Weiner,

of Kansas City, presented two subjects, "Blood Chemistry" and "Live Stock Remedies," the latter an exposé of the many nostrums and cure-alls designed to separate the victims from their money. Dr. H. D. Ricks, of Pauls Valley, read a short paper on "Inspection and Scoring of Dairies," and Dr. L. J. Allen and C. C. Hisel read and explained such state and federal regulations as are of special interest to the entire profession.

The annual banquet was held at the Skirvin Hotel on the evening of the 19th, with a total attendance of more than one hundred. Dr. A. T. Kinsley, as the principal speaker of the evening, gave an interesting account of his observations on his tour of Europe and the International Veterinary Congress.

Officers elected for the ensuing year are: Dr. H. W. Ayers, Oklahoma City, president; Dr. L. J. Allen, Oklahoma City, vice-president; Dr. C. H. Fauks, Oklahoma City, secretary, and Dr. F. Y. S. Moore, McAlester, treasurer.

The Association voted to hold the next semi-annual meeting in connection with a short course for graduate veterinarians, at the Oklahoma A. & M. College, Stillwater, early in June.

C. H. Fauks, *Secretary.*

SOUTHERN STATES VETERINARY MEDICAL ASSOCIATION

The fifteenth annual meeting of the Southern (formerly Southeastern) States Veterinary Medical Association was held in Birmingham, Alabama, January 19-20, 1931.

All papers presented were good, and several brought out an unusual amount of discussion. Mr. J. L. Lisle, county agent for Jefferson County, gave a very pointed and well-planned talk on "Coöperation of the County Agent and Veterinarians."

Dr. E. F. Thomas, of the University of Florida, presented a paper, entitled "Poultry Diseases," which covered this subject very thoroughly and explained many points to the satisfaction of all present. Florida is indeed fortunate in having such a capable veterinarian devoting his time to poultry diseases.

Dr. M. Jacob, of the University of Tennessee, presented "The Problem of Bang Abortion Disease in the South." This paper will be published in the Journal.

Dr. Burr Ferguson, of Birmingham, talked on "Phagocytosis," and described how the number of white blood cells is influenced

by hydrochloric acid. He used words, pictures and patients in his explanations.

Other papers presented were equally interesting and instructive, and we are expecially grateful to Dr. Maurice C. Hall, president of the A. V. M. A., and Dr. E. M. Nighbert, of the Zoölogical Division, U. S. Bureau of Animal Industry, for their contributions to the program.

The afternoon of the second day was spent in a sight-seeing trip through the famous roller mills of the South.

The date for our next annual meeting will be advanced to November 9-10, 1931, in order to comply with the provisions of the Constitution. The meeting will be held in Atlanta, Georgia, and it is hoped that it will not conflict with meetings to be held in other states.

Officers were elected as follows: President, Dr. J. L. Hopping, Atlanta, Ga.; first vice-president, Dr. W. A. Hornaday, Greensboro, N. C.; second vice-president, Dr. E. P. Flower, Baton Rouge, La.; third vice-president, Dr. E. F. Thomas, Gainesville, Fla.; secretary-treasurer, Dr. M. R. Blackstock, Spartanburg, S. C.

M. R. Blackstock, *Secretary-Treasurer.*

KANSAS CITY ASSOCIATION OF VETERINARIANS

The annual meeting of the Kansas City Association of Veterinarians was held at the Hotel Baltimore, Kansas City, December 9, 1930. At this meeting, the very timely subject of "Shipping Fever in Horses and Mules" was presented by Dr. C. E. Salsbery. Col. R. J. Stanclift, U. S. Army, retired, discussed "Shipping Fever in Army Horses and Mules." Much valuable information was disseminated in the lively discussion which followed.

Officers for the year 1931 were elected unanimously as follows: President, Dr. C. C. Pemberton, Liberty, Mo.; vice-president, Dr. J. L. Jones, Blackburn, Mo.; secretary-treasurer, Dr. J. D. Ray, Kansas City, Mo.

The new officers were installed at the February meeting, which took the form of a dinner, with 45 veterinarians and members of their family and friends in attendance. A very interesting program had been arranged, using the talent of members of the Association.

J. D. Ray, *Secretary.*

NEVADA STATE VETERINARY ASSOCIATION

The annual meeting of the Nevada State Veterinary Association was held at the Agricultural Building on the University of Nevada campus, Reno, January 21, 1931. After the business session, the following program was presented:

"Sarcoptic Scabies of Cattle," by Dr. F. E. Henderson, Elko.
"The Diagnosis of Pregnancy in Cattle," by Dr. G. T. Woodward, Fallon.
"The Control of Animal Diseases in Europe," by Dr. F. M. Hayes, Davis, Calif.
"Review of the 1931 California Veterinary Conference," by Dr. Warren B. Earl, Reno.
"Observations on the Study of Brucellosis in Swine and Cattle," by Dr. F. M. Hayes, Davis, Calif.
"A Case of *B. Hemolyticus* infection in a Hog," by Drs. Edward Records, Reno, and F. E. Henerson, Reno.
"Coccidiosis of Poultry," by Dr. K. W. Niemann, Reno.
"Acute Caseous-lymphadenitis of Sheep. Case report," by Dr. Robert Dill, Reno.

The newly elected officers of this Association are as follows: Dr. K. W. Niemann, Reno, president; Dr. F. E. Henderson, Elko, vice-president; Dr. Warren B. Earl, Reno, secretary-treasurer.

WARREN B. EARL, *Secretary*

ALABAMA SHORT COURSE FOR GRADUATE VETERINARIANS

The annual Short Course for Graduate Veterinarians was held at the Veterinary College, Alabama Polytechnic Institute, February 2-7, 1931. The main lecturer and operator at this course was Dr. T. H. Ferguson, of Lake Geneva, Wisconsin. As usual, he talked and operated on horses, mules, cattle and hogs every day. His instruction and actual demonstrations were well received by the veterinarians and all practitioners present were sure that his work here would help them in their practice.

Fortunately Dr. D. M. Campbell, editor of *Veterinary Medicine*, came south to bask in Alabama sunshine. He said he was on his way to Florida. But it was so sunny and warm in Alabama that he remained here during the entire week. He was pressed into service and delivered one to two lectures a day on practical subjects and every one was pleased with the facts and good instructions that he gave. He has had much contact with many practitioners in all parts of the United States and Europe.

One night was devoted to meat inspection. This was to bring before the veterinarians, of the various states represented, that federal, state, county and municipal meat inspection was work that belongs exclusively to the graduate veterinarian and that it

was time for veterinarians to take the field and do their duty to the public and the profession.

Another night was occupied with a series of talks, moving pictures and discussions on milk inspection. Again the question came up as to the milk inspector, and every one conceded that milk inspection was a professional work that belongs to the graduate veterinarian. The question of raw milk and pasteurized milk was raised and a spirited discussion followed. Some of the points brought out may be briefly stated as follows:

1. Raw milk, produced under good sanitary conditions and efficient veterinary inspection, with tuberculin-tested, udder-tested and clean healthy cows, is the best milk the public can get, since milk is nature's best single food.
2. Where efficient inspection is lacking, and all kinds and conditions of milk are mixed, efficient and constantly supervised pasteurization is advised, especially for large cities and where good, fresh, clean, natural, raw milk can not be obtained.
3. At present, in most states, milk inspection is done by laymen and others who are not trained for efficient inspection and this field should be taken over by the graduate veterinarians.

Dr. A. H. Williamson, milk inspector of Charlotte, N. C., presented a moving picture of his local inspection system, where there is a premium placed on good, clean, natural, raw milk. No case of typhoid fever or any other milk-borne disease has been found in the city of Charlotte, during the years of his inspection work.

Dr. Ed. D. King, meat and milk inspector of Valdosta, Georgia, gave a lecture on the meat and milk inspection system of the city of Valdosta. This is another raw-milk city with a good record and no pasteurization.

There were lectures and operations, clinical demonstrations made on dogs and poultry, and other subjects, by Drs. Hays, Everett, Emmel, McAdory and Cary of the A. P. I. veterinary faculty.

The Alabama Veterinary Medical Association met, transacted business and elected the following officers for the coming year: Dr. W. B. Castleberry, Birmingham, president; Dr. R. S. Sugg, Auburn, vice-president; Dr. C. A. Cary, Auburn, secretary-treasurer.

C. A. CARY, *Secretary*

McLEAN COUNTY VETERINARY ASSOCIATION

The annual meeting of the McLean County Veterinary Association was held at Bloomington, Ill., February 3, 1931.

Bot eradication for the control of nose fly was the principal topic on the program. Drs. L. N. Morin, of McLean; W. V. Nesbitt, of Lincoln; and C. B. White, of Stanford, reported their experiences, which may be summarized as follows:

Treating horses by the hundred daily, for a couple of weeks, recalled the good old days for the practitioners of McLean and Logan counties. More than 3,000 horses were treated in sections of these two counties during the last three weeks of January, in an effort to get rid of bots then, and to control the nose fly next summer. Carbon disulphid (6 drams for horses and 3 drams for colts), put up in sealed gelatin capsules, is the medication used. Treating well horses, with or without the aid of the balling-gun, was found to be quite a different procedure from the treatment of sick horses. Quite a few capsules were broken, and for a few minutes the horses being treated showed considerable distress. This passed off in a very few minutes and another capsule was then given.

The project is a community effort in coöperation with the University of Illinois and the local farm bureaus. Meetings are held, and some representative from the University explains the nature of the project and how it is to be carried out. Farmer leaders are appointed to line up their neighbors in their respective localities and get the horses ready for the veterinarian. Fasting for three feeds precedes the treatment. The benefits in ridding the horses of other intestinal parasites are sufficient to repay the farmers for the trouble and the fee charged for the work. From each section the farmers are reported to be enthusiastic over the results already obtained. The fee charged by the veterinarians is 50 cents per head.

Dr. W. H. Welch, Chief Veterinarian, State Department of Agriculture, reported on the rabies situation in Illinois. He said that scarcely a week passes without rabies being reported in some new territory. Nine counties were under quarantine at the time Dr. Welch reported. The death rate in humans is said to be on the increase. Usually good coöperation follows the placing of a quarantine on a county, but unfortunately there are some localities in which it is almost impossible to secure proper coöperation. Dr. R. E. Nesbitt has been appointed by the

Director of Agriculture to give his entire time to rabies control work.

Dr. James McDonald, U. S. B. A. I. Inspector-in-charge of hog cholera control work in Illinois, reported swine conditions as being quite favorable. A few isolated cases of cholera have made their appearance. Considerable pneumonia, following flu, has been reported in the central part of the State. Necrotic enteritis and pneumonia are encountered more frequently in the northern part of Illinois at this season of the year.

Dr. J. S. Koen reported on a recent conference with extension officials in Washington, D. C. He reported progress in the work of the A. V. M. A. Special Committee on Agricultural Extension Service, in an effort to bring about better relations between veterinarians and extension workers.

Officers for 1931 were elected as follows: President, Dr. R. E. Nesbitt, Clinton; vice-president, Dr. A. B. Pletsch, McNabb; secretary-treasurer, Dr. J. S. Koen, Bloomington.

J. S. KOEN, *Secretary.*

MISSOURI SPECIAL COURSE FOR GRADUATE VETERINARIANS

The Special Course for Graduate Veterinarians, given under the direction of the Department of Veterinary Science of the College of Agriculture, University of Missouri, in coöperation with the Missouri Veterinary Medical Association, was held January 20-23, 1931, at the Veterinary Building, Columbia, Missouri.

This was one of the most successful meetings ever held in the State. Following the desires of the Association, as expressed at its meeting in Hannibal, last July, a program was prepared featuring the clinic. Dr. F. H. Suits, of Odessa, president of the Association, presided.

Following the opening preliminaries, Tuesday morning, Prof. Berley Winton, head of the Poultry Extension Department in Missouri, gave a demonstration of culling fowls. This was followed by an elaborate demonstration and display of diseased birds and pathological specimens from poultry. Dr. A. J. Durant, of the Veterinary Department, presented this feature of the program.

The afternoon program started with Dr. J. C. Flynn, of Kansas City, who was in charge of small-animal work. He first discussed

"The Stud, Matron and Pups," and then "Diseases Common to Certain Breeds." The meeting moved to the clinic room for the remainder of the afternoon, where Dr. C. H. Case, of Akron, Ohio, was in charge of clinical demonstrations pertaining to sterility in cattle. Dr. E. T. Hallman, of Michigan State College, discussed the pathology of the cases presented. Following the supper period, Dr. Flynn resumed the stage and presented a series of motion pictures of great interest to all. These led to a general discussion of small-animal practice, with Dr. Flynn as leader.

Wednesday morning was devoted to a small-animal clinic. Dr. A. W. Uren and Dr. O. S. Crisler, of the Veterinary Department, were kept busy preparing subjects while Dr. Flynn and his hospital assistant Dr. McLaughlin, operated and demonstrated. Many new and interesting operations were performed. Dr. Ashe Lockhart, of Kansas City, demonstrated a blood transfusion in a dog.

The afternoon program opened with an illustrated talk by Dr. E. T. Hallman, on "The Effect of Abortion Disease on the Udder of Cows." This was followed by a clinic, where Dr. C. H. Case demonstrated diseases and operations on the udder of cows. Dr. A. W. Uren assisted.

A night session was held and Dr. Hallman explained "The Plan of Abortion Control in Michigan." Dr. J. W. Connaway gave some of his "Observations on Abortion Control in Europe," as noted last summer.

The Thursday program started with an illustrated talk on "The Nose Bot-fly of the Horse and Its Control," by Dr. Fred D. Butcher, Washington, D. C. This was followed by motion pictures illustrating epidural anesthesia, and slides showing "Operative Procedure in Surgical Cases," by Dr. E. R. Frank, of Kansas State Agricultural College. The remainder of the morning was devoted to a clinic featuring surgical operations on large animals, by Dr. Frank. This clinic continued through the afternoon. Dr. Frank used epidural anesthesia on many subjects for his operations. Dr. Ashe Lockhart demonstrated the intraspinal injection of tetanus antitoxin in a horse.

The annual banquet was held following the afternoon clinic. Eighty veterinarians and visitors, including members of the College faculty, attended.

Dr. Frank continued his part of the clinic Friday morning. Following this the swine program was ushered in. Dr. A. T.

Kinsley had charge of a round-table discussion conducted along with the clinic. The program closed at noon.

During the meeting a movement was started to have a committee of about fifteen veterinarians call on the Director of Extension Service in Missouri and offer the coöperation of the Association with the Extension Service and try to promote harmony and coöperation between the profession and extension workers throughout the State. This committee was favorably received and their proposal put in writing and read before the Association, which unanimously approved the letter and requested the secretary to sign and mail it to Mr. R. R. Thomasson, Assistant Director, in charge of extension in Missouri. This is considered by many to be the most important step taken by our Association recently. The letter follows:

For some time we, as civic-minded citizens as well as members of the Missouri Veterinary Medical Association, have felt the lack of coöperation between the extension workers and veterinary practitioners. We believe there should be closer coöperation and more earnest team work between these two bodies of citizens, both having an important function to perform in conveying certain important as well as vital knowledge to the live stock and agricultural interests of Missouri.

Therefore, we come as representatives of the Missouri Veterinary Medical Association to present to you our compliments and to assure you, as director of extension work for the state of Missouri, that the entire membership of the Missouri Veterinary Medical Association is desirous of supporting the worthy projects coming under your juridsiction. We beg to advise that it is the consensus of opinion of our Association that our members stand ready to aid your various county agents and extension workers in carrying out their programs, not only upon live stock topics, but various other projects engaged in. We stand as a man to place ourselves at your disposal in presenting to the public, in the way of public addresses or any other team work, in coöperation with county agents and extension workers, our services in order that these worthy projects may go over in better form. We invite you as director of this important work to call the attention of your assistants to these facts and urge them to under no consideration hesitate to call upon local veterinary practitioners in connection with live stock sanitary programs or the betterment of live stock conditions in general. We furthermore request you to draft veterinary practitioners to assist your agents in all classes of worthy projects and likewise to inform the veterinarians of the nature of these projects, in order that the veterinarians themselves may be in a better position to explain to their clientele the nature of such projects and the reasons therefor.

Our Association is fully cognizant that in some isolated cases veterinary practitioners have been guilty of making excessive charges for services rendered, while in other cases, perhaps, the type of service rendered has not been of the best quality. Our Association, in its desire and ambition to raise the standard of the veterinary profession of the state, as well as to see that the agriculturist receives a square deal in each and every case, has appointed a committee of five prominent veterinarians whose duty it shall be to answer complaints and, where deemed necessary, make actual investigations in the local communities from which the complaints are received. In connection with this particular matter we earnestly request of you to lend us your coöperation in order that each and every member of our profession shall be induced to con-

duct himself professionally and otherwise in a manner that can win only the highest esteem of the citizens of each and every community. In case of a local practitioner failing to perform conscientious service or establishing what would be considered ordinarily an unreasonable and excessive charge for his services, we earnestly request that your extension worker assistants take this matter up with your office and you in turn communicate with the Secretary of our State Association. We advocate this measure because we feel it is a means of preventing local entanglements of a disagreeable nature between county agent and veterinary practitioner.

Professor Thomasson, we also are very desirous that you, as Director of Extension Work, impress upon the minds of your assistants that they, in as much as possible, refrain from going too deeply into matters veterinary, especially in connection with actual diagnosis and treatment of disease. Our reasons we believe to be well founded. We feel that the average graduate veterinarian, because of his training and experience is beyond doubt the best qualified man in a community to render individual treatment and preventive measures. Furthermore, we feel that the duties thrust upon the average extension worker are so varied and so great as to render the extension worker handicapped when attempting to deal out actual scientific treatment to individual animals as well as herds. We are indeed fortunate and furthermore thankful to say that only in a few isolated cases in Missouri have county agents attempted to do actual veterinary practice or dispense drugs, vaccines, etc., direct from their offices. We certainly appreciate this policy which has been established by the Extension Division of the College of Agriculture and earnestly pray and sincerely hope that the same policy will be continued. In view of these facts, we implore you, as the new Director of Extension Work, to kindly ask all county agents and their extension workers to please continue to refrain from attempting to render a class of service which we believe should be rendered only by qualified graduate veterinarians.

In conclusion, we want to assure you, as a scientific society, we are sincere in offering this assistance and only hope that a closer coöperation will result from these conferences. It is timely to say that the general condition of agriculture in the state of Missouri certainly demands harmonious team-work on the part of all associations, individuals and governmental branches for the promotion of one great project, namely, a more stable and prosperous agriculture for the good old state of Missouri.

Resolutions were adopted expressing the sympathy of the members of the Association for the families of Dr. D. B. Morgan, of Neosho, and Dr. H. F. Crooks, of Chilhowee, who died since the summer meeting. A resolution endorsing Dr. D. F. Luckey for the Capper Award, for distinguished service to agriculture, was adopted. The endorsement was based on the work of Dr. Luckey in perfecting the intradermal tuberculin test, which is now used so widely for the eradication of bovine tuberculosis.

There was a hearty response to the appeal of the Local Committee on Arrangements for the 1931 A. V. M. A. convention. Much interest in this meeting was displayed.

J. D. Ray, *Secretary.*

The Ohio Supreme Court upheld the validity of compulsory tuberculin testing under the state law, in a decision rendered March 19.

MICHIGAN DIVISION, NATIONAL ASSOCIATION OF B. A. I. VETERINARIANS

On the evening of February 3, 1931, the Michigan Division of the National Association of B. A. I. Veterinarians had the privilege of listening to Dr. B. J. Killham, of the Extension Department, Michigan State College, on the Subject of "Abortion Disease Control Project." The speaker was introduced by Dr. H. T. Grossman, of the Detroit B. A. I. force. Dr. Killham presented his subject in a very interesting manner, and it aroused quite a lively discussion, which was participated in by many of those present.

PUBLICITY COMMITTEE.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Connecticut Veterinary Medical Association was held at the Hotel Garde, Hartford, February 4, 1931. Officers were elected as follows: President, Dr. J. J. Kavanek, Hartford; first vice-president, Dr. C. Van Vlandren, Naugatuck; second vice-president, Dr. C. A. Burnette, Winsted; secretary, Dr. Edwin Laitinen, West Hartford; treasurer, Dr. Thomas Bland, Waterbury.

EDWIN LAITINEN, *Secretary.*

SAINT LOUIS DISTRICT VETERINARY MEDICAL ASSOCIATION

The veterinarians of Saint Louis, Missouri, and vicinity recently organized the Saint Louis District Veterinary Medical Association, and plan to hold weekly meetings. Officers of the new organization are as follows: President, Dr. F. O. Killian; vice-president, Dr. J. T. Jenneman; secretary-treasurer, Dr. S. W. Haigler, all of Saint Louis.

A campaign has been launched to have every eligible veterinarian in the district become a member of the American Veterinary Medical Association, before the Kansas City convention in August.

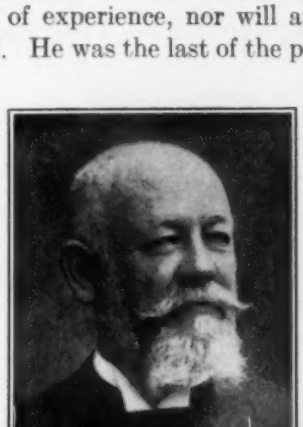
Administrative Committee Appointed

Dr. Livingston Farrand, president of Cornell University, has appointed an administrative committee to direct the New York State Veterinary College, until such time as a successor to the late Dr. P. A. Fish is selected. The Committee consists of Drs. Earl Sunderville, Chairman, W. A. Hagan and R. R. Birch.

NECROLOGY

PROF. ALCIDE RAILLIET

Railliet is dead. The greatest of all veterinary parasitologists died on December 25, 1930, at the age of 79. At the time he published his great work, the *Traité de zoologie médicale et agricole,* in 1895, Prof. Railliet knew practically all that was known of veterinary parasitology and had personally contributed a large part of that knowledge. No other worker in this field has had his wide range of experience, nor will anyone again try to cover so large a field. He was the last of the pioneers who in their



PROF. ALCIDE RAILLIET

day explored the entire known range of veterinary parasitology and built in all its major fields.

No parasitologist has stood higher in the esteem of parasitologists everywhere than has Railliet. Some years ago the Helminthological Society of Washington sent him a souvenir of their regard on the occasion of his birthday, the remembrance being presented by Prof. Brumpt. His death has made impossible one

of the writer's eager desires—to meet Railliet. In a quarter of a century's experience, the writer recalls no instance in which he has heard an unkind or unfavorable criticism of Railliet. His work was sound and his presentation was fair and courteous.

Prof. Railliet was an honorary member of the American Veterinary Medical Association. In his passing, the veterinarians and parasitologists of the world lose an outstanding figure. It is with deep regret that we remove his name from the membership of the living and place it with the illustrious dead, with Barrois, Blanchard, Braun, Dalrymple, Gedoelst, Goto, Grassi, Ijima, Laveran, Linstow, Looss, Luehe, Manson, Monticelli, Neumann, Odhner, Parona, Ransom, von Ratz, Verrill, and the others to whom our younger generation owes its knowledge of parasitology. To his widow and to his colleagues in France we extend the sympathy of American veterinarians and parasitologists who have honored Prof. Railliet and who mourn his departure.

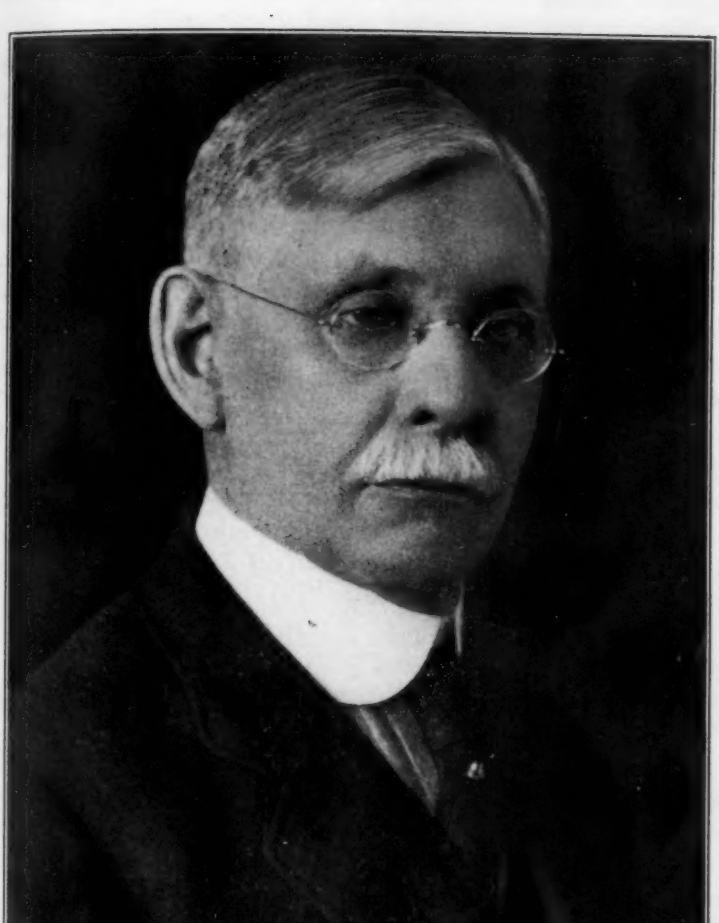
M. C. H.

VERANUS ALVA MOORE

Dr. Veranus A. Moore, former dean of the New York State Veterinary College at Cornell University, died at the Ithaca Memorial Hospital, February 11, 1931, following an operation performed several days previously.

Born in Houndsfield, New York, April 13, 1859, Dr. Moore entered Cornell University, after completing his preliminary education, and received the degree B. S. in 1887. Subsequently he took a course in medicine at Columbian University (now George Washington University), Washington, D. C., and took his degree M. D. in 1890. In 1911, the University of Pennsylvania conferred on Dr. Moore the degree Doctor of Veterinary Medicine (*causa honoris*), and in 1919, he received the degree Doctor of Science from Syracuse University.

From 1890 to 1896 Dr. Moore was employed in the U. S. Bureau of Animal Industry, attached to the Pathological Division. From 1895 to 1896, he was chief of the Division, having succeeded Dr. Theobald Smith. In 1896, Dr. Moore left the government service to return to Cornell University as a member of the first veterinary faculty of the institution, and he remained at Cornell until June 21, 1929, when he reached the age of retirement. He was Professor of Veterinary Pathology, Bacteriology and Meat



VERANUS ALVA MOORE

April 13, 1859—February 11, 1931

President of the American Veterinary Medical Association

1918-1919

Inspection during the entire period, and from 1908 until his retirement he was dean of the College.

Dr. Moore joined the A. V. M. A. in 1901, and held many offices and committee assignments during his membership. In 1911, 1912, 1915 and 1916, he was elected a vice-president, and in 1918 he was honored with the presidency. He was chairman of the Committee on Diseases, 1908-1910 and 1912-1915. He was a member of the International Commission on Bovine Tuberculosis from 1909 to 1918. Following the re-organization of the Association in 1916, Dr. Moore was elected member-at-large of the Executive Board and served as first chairman of the Board, 1916-1917.

During the recent International Veterinary Congress, Dr. Moore was elected an Honorary Associate of the Royal College of Veterinary Surgeons (London).

A voluminous writer, Dr. Moore was author of the following books: *Laboratory Guide for Beginning Students in Bacteriology, The Pathology and Differential Diagnosis of Infectious Diseases of Animals, Principles of Microbiology* (1912), *Bovine Tuberculosis, Herd Health Book.* With Dr. C. P. Fitch, he wrote *Exercises in Bacteriology and Diagnosis,* and with Dr. W. A. Hagan he was the author of *General and Pathogenic Bacteriology and Immunity* (1925).

As a public-spirited citizen, Dr. Moore found time to do much for the improvement of conditions in the city where he lived. He served for twelve years as a member of the Board of Education of Ithaca and, for a similar period, he was a member of the local Board of Health. For a long time he was a member of the Board of Trustees of the Ithaca Memorial Hospital, and when he gave up his active connection with Cornell University, he was appointed superintendent of the Hospital. He was prominent in the work of the First Methodist Church and active in Masonry, having served as Master of Hobasco Lodge No. 761, F. and A. M. He was a member of Eagle Chapter 58, Royal Arch Masons, Saint Augustine Commandery No. 38, Knights Templar, Kalurah Temple of the Shrine and was a past district deputy of the Cayuga-Tompkins Masonic District.

Dr. Moore was also a director of the Ithaca Savings and Loan Association, and a member of the Ithaca Rotary Club. One of his favorite affiliations was with the Cosmos Club, in Washington, D. C.

Among the more recent contributions from the pen of Dr. Moore was "Veterinary Education and Service at Cornell University, 1896-1929," published in the *Cornell Veterinarian* for April, 1929. This was really a history of the New York State Veterinary College at Cornell University.

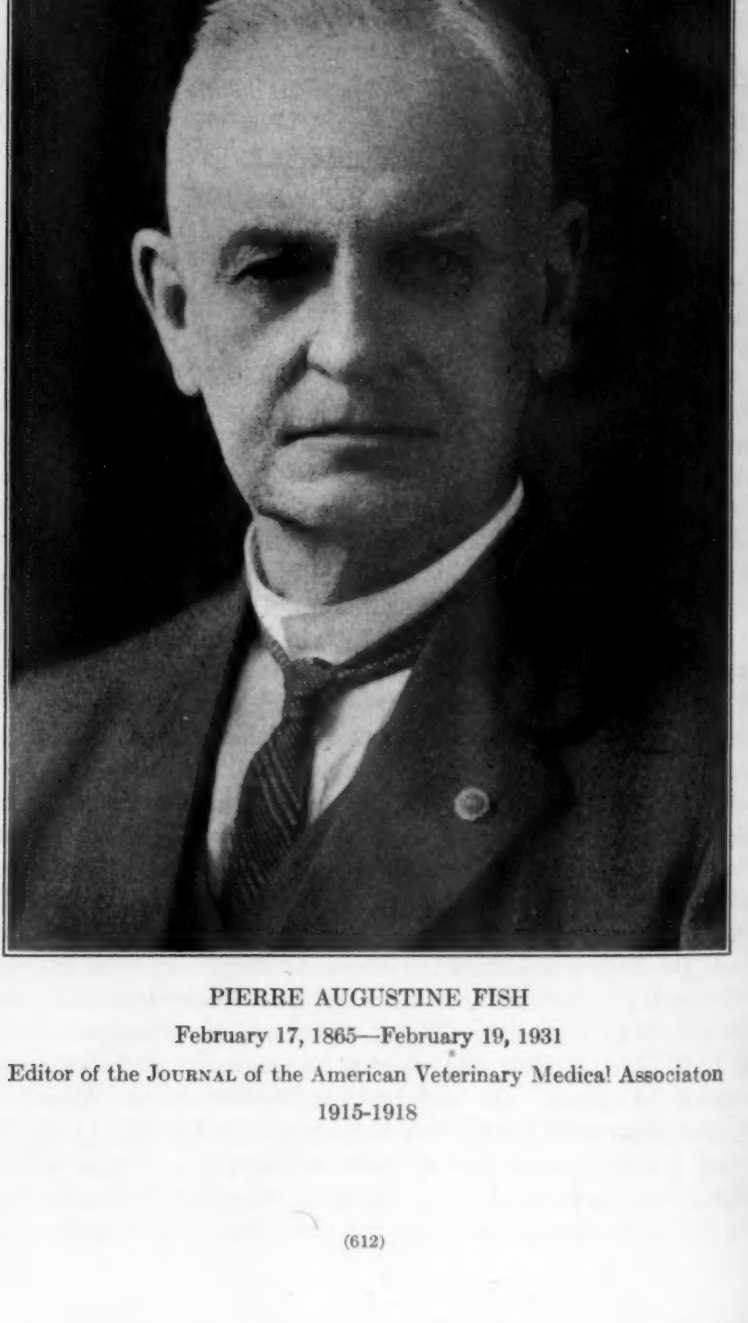
Dr. Moore is survived by his widow (née Marie Louise Blossom), one daughter and two sons, one of whom, Dr. Ervin V. Moore, of Cortland, New York, is a veterinarian. Three brothers also survive.

PIERRE AUGUSTINE FISH

Dr. Pierre A. Fish, dean of the New York State Veterinary College at Cornell University, died at Ithaca, N. Y., February 19, 1931. Influenza, complicated with pneumonia, was the cause of death.

Born at Chatham, N. Y., February 17, 1865, Dr. Fish attended South Berkshire Institute, at New Marlboro, Mass., and then entered Hartwick Seminary, at Otsego, N. Y., being graduated from the latter in 1885. In 1890 he was graduated from Cornell University, with the degree B. S., and four years later he received his Doctor of Science from the same institution. He first studied veterinary medicine at the National Veterinary College (later Columbian University) in Washington, D. C., and received his D. V. S. in 1896. From 1895 to 1896 he worked under Dr. V. A. Moore, who was then chief of the Pathological Division of the U. S. Bureau of Animal Industry. In 1896 he returned to Cornell University and became a member of the original veterinary faculty organized by the late Dr. James Law. Dr. Fish was made assistant professor of veterinary physiology, materia medica and therapeutics. In 1899 he received the degree D. V. M. from Cornell University. In 1902 he was promoted to a full professorship and was appointed secretary of the veterinary faculty. In 1929, upon the retirement of the late Dr. Veranus A. Moore as dean, Dr. Fish was named his successor.

When the American Veterinary Medical Association took over the *American Veterinary Review*, to become the JOURNAL of the A. V. M. A., Dr. Fish was selected to act as the first editor and business manager. He had been a member of the Board of Alumni Editors of the *Cornell Veterinarian* (1911-1915) and, for about a year, was editor of that publication. This post was relinquished in favor of Dr. C. P. Fitch, when Dr. Fish took over his duties in connection with the JOURNAL. He remained as



PIERRE AUGUSTINE FISH

February 17, 1865—February 19, 1931

Editor of the JOURNAL of the American Veterinary Medical Associaton

1915-1918

editor until he entered military service in the late war (1918), having been succeeded by Dr. W. H. Dalrymple, of Baton Rouge, La. Dr. Fish entered the Veterinary Corps with the rank of Major, and was detailed to the office of the Surgeon General in Washington, D. C.

Dr. Fish was the author of the following well-known text-books: *Practical Exercises in Comparative Physiology and Urine Analysis, Elementary Laboratory Guide for Students in Materia Medica and Pharmacy, A Book of Veterinary Doses, Therapeutic Terms and Prescription Writing* (1905), *The Examination of the Urine in the Horse and Man* (1906), and *Elementary Exercises in Physiology*. He contributed many scientific articles in the field of physiology, particularly on the digestion of fats, in collaboration with Dr. S. H. Gage. Later he studied the phenomena of milk fever and pointed out that there is a decrease of phosphates in the blood of cows affected with this condition.

Dr. Fish joined the A. V. M. A. in 1899 and was elected a vice-president in 1908. He was a member of the Committee on Intelligence and Education, 1909-10 and 1912-15; a member of the Committee on Necrology, 1920-21; a member of the Committee on History, 1923-24 and 1929-31 and chairman, 1926-27. He was a member of the New York State Veterinary Medical Society, and served as vice-president in 1914 and as president in 1915.

Other affiliations included the American Association for the Advancement of Science (fellow), the Zoölogical Society, Sigma Xi, Phi Kappa Phi, Alpha Psi and Phi Zeta.

Surviving Dr. Fish are his widow, four daughters, one son and one brother.

ARTHUR T. COLEMAN

Dr. Arthur T. Coleman, of Monrovia, Calif., died at his home, December 25, 1930. Born in Chippewa Falls, Wis., July 12, 1875, Dr. Coleman attended common schools and the Kansas City Veterinary College. Following his graduation in 1903, he entered the service of the U. S. Bureau of Animal Industry and was attached to the Field Inspection Division for many years.

Dr. Coleman joined the A. V. M. A. in 1921. He was also a member of the National Association of B. A. I. Veterinarians. Funeral services were under Masonic auspices. He is survived by his widow and one daughter.

A. R. K.

HARRY F. CROOKS

Dr. Harry F. Crooks, of Chilhowee, Missouri, died November 21, 1930, after a protracted illness caused by tuberculosis. Born at Shawnee Mound, Mo., April 30, 1891, he attended the Kansas City Veterinary College and was graduated in 1916. He was engaged in general practice at Chilhowee.

Dr. Crooks joined the A. V. M. A. in 1929. He was also a member of the Missouri Veterinary Medical Association.

EDWARD M. SULLIVAN

Dr. Edward M. Sullivan, of Milwaukee, Wisconsin, died at his home, January 21, 1931, after an illness of several months due to heart disease. He was 47 years old. Dr. Sullivan was a graduate of the Chicago Veterinary College, class of 1905, and had practiced in Milwaukee for 25 years. He was County Veterinarian, a member of the Milwaukee Athletic Club, Ozaukee Country Club, Elks Club, Izaak Walton League, Rotary Club, Knights of Columbus, Milwaukee Driving Club and Washington Park Driving Club. He helped organize the latter two clubs. He is survived by his widow, three brothers and five sisters.

Dr. Sullivan left an estate valued at $160,000.

ARTHUR D. MATTHEWS

Dr. Arthur D. Matthews, of Chicago, Ill., was killed February 11, 1931, when he was struck by an automobile on West Washington Boulevard. Born in Peterboro, Ontario, May 11, 1845, Dr. Matthews was a graduate of the Ontario Veterinary College, class of 1881. For many years he was located at Lafayette, Indiana, in general practice. Twelve years ago he removed to Chicago. Two sons survive him.

GILLMORE G. BLANK

Dr. Gillmore G. Blank, of Allentown, Pa., died early in the month of February. He was a graduate of the Ontario Veterinary College, class of 1884, and practiced in Allentown for many years. He was a member of the Pennsylvania State Veterinary Medical Association.

ADRIAN VALE HALL

Dr. Adrian V. Hall, of Oxford, Pa., died in the Coatesville, Pa., Hospital, February 19, 1931, as the result of an accident. He was a graduate of the University of Pennsylvania, class of 1906. For a number of years following his graduation, Dr. Hall was a member of the faculty of the San Francisco Veterinary College. He was a member of the A. V. M. A. from 1909 to 1916. Several years ago Dr. Hall obtained considerable notoriety for himself by lining up with forces who were opposed to tuberculin testing.

J. HUME CARTER

Dr. J. Hume Carter, of Mount Holly, N. J., died in the Burlington County Hospital, February 20, 1931, after an illness of three weeks.

Born in Canada, Dr. Carter received his veterinary education at the Ontario Veterinary College. He was a member of the class of 1888 and located in Mount Holly shortly thereafter. He was chief veterinarian to the Rancocas Stock Farm, the estate of Harry F. Sinclair, for many years. Dr. Carter was also a director of the Union National Bank and Trust Company, as well as a member of the Masons and Elks.

Dr. Carter is survived by his widow and one brother.

HUGH T. DOAK

Dr. Hugh T. Doak, of Kansas City, Mo., died in the General Hospital, Kansas City, February 23, 1931, of heart disease, at the age of 54. Dr. Doak was a graduate of the Kansas City Veterinary College, class of 1905. For several years following his graduation, he was in the employ of the U. S. Bureau of Animal Industry. At the time of his death he was practicing in Kansas City. Interment was at Maple Hill Cemetery, Kansas City, Kansas.

LLOYD F. SCHILLER

Dr. Lloyd F. Schiller, of Columbiana, Ohio, died at his home, March 8, 1931, after an illness dating back a year. Born May 22, 1889, in Springfield Township, Mahoning County, Ohio, he attended local schools, Poland Union Seminary and the Terre Haute Veterinary College. He was graduated from the latter

in 1916 and located in Poland, removing to Columbiana about ten years ago. He was a member of the Ohio State Veterinary Medical Association and Allen Lodge No. 256 F. & A. M. He is survived by his widow, four sisters and three brothers.

M. J. KELLAM

Dr. M. J. Kellam, of Winnipeg, Manitoba, died suddenly, March 15, 1931. He was a division supervisor of the Meat Inspection Division of the Health of Animals Branch, Canada Department of Agriculture, and had just returned from an inspection tour of points in western Canada. He was at his office the day before his death, appearing to be in his usual normal health.

Born at Selkirk, Ontario, January 11, 1871, he attended local grade and high schools and then entered the Ontario Veterinary College. He was graduated in 1893 and practiced at Selkirk for a number of years. In 1907, when the Dominion Government inaugurated meat inspection service, Dr. Kellam was a member of the first staff appointed to this work in Canada. For some time he was in charge of this work in the Montreal district. In 1914 he was appointed Western Division Supervisor, and for a time was stationed at Calgary, Alberta, later going to Winnipeg.

Dr. Kellam joined the A. V. M. A. in 1921. He is survived by his widow (neé Jessie Gee), one daughter and three sons.

W. H.

HENRY R. LIEBENSTEIN

Dr. Henry R. Liebenstein, of Adell, Wisconsin, died suddenly of heart failure while on a professional call, near Cascade, Wis., March 16, 1931. Born in Town Sherman, October 17, 1871, he had been a resident of Sheboygan County all his life. He was a graduate of the Grand Rapids Veterinary College, class of 1907. He is survived by his widow (née Theresa Oberhofer), three sons and three daughters. One of the sons, Dr. Edward H. Liebenstein (Gr. Rap. '17), of Grafton, Wis., is a veterinarian.

WILLIAM L. COHENOUR

Dr. W. L. Cohenour, of East Saint Louis, Ill., died at the Huber Memorial Hospital, Pana, Ill., March 17, 1931. Three months previously he had suffered a stroke of paralysis, and gradually declined until his death.

Born in Pana, Ill., March 29, 1870, Dr. Cohenour attended local schools before entering the Chicago Veterinary College. He was graduated in 1904. For many years he was in the employ of the U. S. Bureau of Animal Industry, stationed at National Stock Yards, Ill. He also acted in the capacity of chief inspector for the Illinois State Department of Agriculture, at East Saint Louis.

Dr. Cohenour joined the A. V. M. A. in 1919. He was a member of Gothic Lodge No. 852, F. & A. M., of East Saint Louis. He is survived by his widow (née Eva Morrison), four daughters, one son, two sisters and one brother, Dr. H. H. Cohenour (McK. '01), of Bismarck, N. Dak.

Reports of the deaths of Dr. H. C. Peters (Ont. '96), of Litchfield, Minn., August 24, 1930, and of Dr. Felix Bey (Chi. '13), of Dodge Center, Minn., September 4, 1930, were recently received.

Our sympathy goes out to Dr. and Mrs. G. R. Satorius, of Athens, Illinois, in the death of their daughter, Gloria Jane, February 22, 1931.

PERSONALS

MARRIAGES

Dr. Harry L. Calhoun (McK. '17), of Beaverton, Mich., to Miss Olive M. Hunter, of Lansing, Mich., at Archbold, Ohio, January 14, 1931.

Dr. T. A. Newlin (K. S. A. C. '28), of Stelton, N. J., to Miss Mabel Cloughesy, of Rocky Ford, Colo., December 6, 1930, at Rocky Ford, Colo.

Dr. M. A. Emmerson (Iowa '25), of Philadelphia, Pa., to Miss Esther E. McCracken, of Centerville, Iowa, at Upper Darby, Pa., December 19, 1930.

BIRTH

To Dr. and Mrs. Harold H. Groth, of Burlingame, Calif., a son, Richard Berry, February 26, 1931.

PERSONALS

Dr. J. G. Blum (Chi. '08), of Normal, Ill., is slowly recovering from his recent illness.

Dr. A. H. DeGroot (Gr. Rap. '08), of Dundee, Mich., is Monroe County Veterinarian.

Dr. Paul S. Moe (Colo. '26) reports a change of address from Fresno, Calif., to Vallejo, Calif.

Dr. George S. Bowler (Mich. '30) has removed from Manchester, Mich., to Tecumseh, Mich.

Dr. W. C. Outhier (San Fran. '04), formerly of Salinas, Calif., is now located at Santa Maria, Calif.

Dr. George E. Jacobi (O. S. U. '20) has accepted a position with the DeVine Laboratories, Goshen, N. Y.

Dr. P. L. Varble (K. C. V. C. '10), McLean County Veterinarian, is convalescing from an appendectomy.

Dr. L. A. Wileden (Mich. '13) has started on his fifth consecutive term as Health Officer of Mason, Mich.

Dr. E. C. Goodrich (Gr. Rap. '15), of Kalamazoo, Mich., has been spending the winter months in Tampa, Fla.

Dr. J. L. Kixmiller (Ind. '15), formerly of Indianapolis, Ind., is now with the Sioux City Serum Co., Sioux City, Iowa.

Dr. R. H. Arpke (Iowa '27), who has practiced in Sheboygan Falls, Wis., since 1927, recently moved to Sheboygan, Wis.

Dr. J. W. Childs (Colo. '28), formerly of Los Angeles, is now associated with Dr. J. E. Van Sant, at Bakersfield, Calif.

Dr. Herbert J. Eichhorn (O. S. U. '30) has removed from Edison, Ohio, to Cardington, Ohio. Address: 112 W. Walnut St.

Dr. J. C. Kimbrough (K. C. V. C. '17) has removed from Lebanon, Mo., to Neosho, Mo., where he is engaged in general practice.

Dr. C. H. Atkinson (Wash. '20), formerly of Fresno, Calif., is now located in Santa Rosa, Calif. His new address is 614 First St.

Dr. F. P. Taylor (McK. '11), of Princeton, Ill., tendered his resignation as county veterinarian March 1, to enter private practice.

Dr. K. R. Moore (Ont. '30), formerly of Woodville, Ont., reports a new address: 4157 Western Ave., Westmont, Montreal, Que.

Dr. D. C. Morgan (Cin. '11) of McComb, Ohio, has been appointed a member of the Ohio State Board of Veterinary Medical Examiners.

Dr. C. W. King (O. S. U. '13), formerly of Trenton, Ohio, has removed to Germantown, Ohio, where he is now engaged in general practice.

Dr. N. L. Nelson (Iowa, 11), of Ames, Iowa, has been elected to the Board of Directors and also a vice-president of Allied Laboratories, Inc.

Dr. Neil J. C. Halpin (Wash. '29), formerly associated with Dr. T. H. Agnew (Ont. '96), of Pasadena, Calif., is now located in Santa Ana, Calif.

Dr. Thomas P. Gallahue (Chi. '17), of Waukegan, Ill., has been reappointed Lake County Veterinarian, for another year, at a salary of $3,500.00.

Dr. T. A. Newlin (K. S. A. C. '28), formerly of Rocky Ford, Colo., is now with the Raritan Hospital for Animals, Lincoln Highway, Stelton, N. J.

Dr. J. R. Berggren (Chi. '13), of New Richmond, Wis., has been assisting Dr. A. A. Feist (U. P. '12), of Saint Paul, Minn., during the latter's illness.

Dr. Albert Sanders, Jr. (Chi. '08), of Stephenson, Mich., is postmaster and Mrs. Sanders is mayor of the town. Nothing like keeping things in the family.

Dr. E. C. Howe (Colo. '29) has removed from Fort Lupton, Colo., to Alliance, Nebr., where he is now associated with one of the largest hog-feeders in Nebraska.

Dr. A. W. Lange (Chi. '12), who practiced for a number of years at Lake Mills, Wis., recently moved to Watertown, Wis., and opened an office at 107 Market St.

Dr. C. Mercer Thomas (U. P. '22), of Nassawadox, Va., accompanied by Mrs. Thomas and Miss Janet Thomas, recently returned from a motor trip to Miami, Fla.

Dr. G. Dow Haimbaugh (Chi. '14), of Rochester, Ind., has been elected clerk of Fulton County. He is combining his duties of county clerk and veterinarian.

Dr. R. H. Stewart (A. P. I. '22), formerly of Indianola, Miss., has accepted a position with the Hinds County Health Department, and is now located in Jackson, Miss.

Dr. B. D. Robbins (Mich. '19), formerly of Grand Ledge, Mich., is now in Milwaukee, Wis., having accepted an appointment in the U. S. Bureau of Animal Industry.

Dr. J. P Miller (St. Jos. '20), who was with the Western Weighing and Inspection Bureau, for several years, has returned to Boonville, Mo., to re-enter general practice.

Dr. E. G. Bailey (K. C. V. C. '18), who was engaged in practice at Canton, Mo., for several years, has moved to Chilhowee, Mo., and reports that he is enjoying his new location.

Dr. F. O. Jacobson (Ind. '23), formerly of Richland Center, Wis., has accepted a position with the U. S. Bureau of Animal Industry, and is now located in Milwaukee, Wis.

Dr. E. F. Sanders (K. S. A. C. '27), formerly of the Department of Veterinary Science, University of Missouri, Columbia, gives his new address as 3314 Summit, Kansas City, Mo.

Dr. E. H. Durr (A. P. I. '24) has accepted a position with the Mississippi State Live Stock Sanitary Board, and will be engaged in the control and eradication of infectious abortion.

Dr. Benner R. Criley (Iowa '28) has located in Springfield, Mass., where he is engaged in general practice. Dr. Criley was formerly connected with the Lederle Laboratories, at Pearl River, N. Y.

Dr. W. N. Armstrong, of Concord, Mich., has been selected as a member of a committee that will arrange plans for celebrating the one-hundredth anniversity of the founding of Concord, on July 18.

Dr. T. E. Munce (U. P. '04), of Harrisburg, Pa., was recently elected a member of the Board of Directors of the University of Pennsylvania Alumni Association, to represent the veterinary alumni.

Dr. F. M. Blatchford (Ont. '93), of Brighton, Mich., lost his home, by fire, in February. The loss was estimated at $15,000.00, with insurance of $12,500. Dr. Blatchford is Livingston County Veterinarian.

Dr. C. W. Fogle (Ont. '07), of Leipsic, Ohio, was the principal speaker at the February meeting of the Putnam County (Ohio) Medical Society. His subject was "The Relation of Bovine to Human Tuberculosis."

Dr. Rex L. Van Sickle (Colo. '10), of Rock Island, Ill., who was formerly Rock Island County Veterinarian, has been appointed district veterinarian in the Bureau of Animal Industry of the Illinois State Department of Agriculture.

Dr. John F. Deadman (Det. '95), of Sault Ste. Marie, Mich., was at interested visitor at the Detroit Dog Show, in March, and did not appear to be any the worse for the operation he underwent at the Mayo Clinic, several months ago.

Dr. O. M. Norton (U. P. '01) and E. S. Norton (U. P. '11), of Greenville, Miss., are erecting a new veterinary hospital. Their old establishment will be torn down to make way for the proposed enlargement of the levee in front of Greenville.

Dr. A. J. Abbott (Ont. '07), of Marshfield, Wis., had a very narrow escape from serious injury, shortly after starting for Madison to attend the annual meeting of the Wisconsin State Veterinary Medical Association, in January. A horse, loose on the highway, suddenly whirled and dashed in front of his car, causing the accident, which happened about six miles north of Wisconsin Rapids.

Dr. H. J. Schmidt (Amer. '86), of New Bremen, Ohio, recently had a narrow escape from being overcome by monoxid gas from his automobile as he was driving to make a professional call. Feeling the effects of the deadly gas, he succeeded in stopping his machine and lowered the windows just a few seconds before he lost consciousness. He was found by two neighbors and quickly revived when he was removed from his car.

PETTICOAT LANE

This Kansas City thoroughfare received its name in the days when the petticoat was a garment and not a historical relic.